

YALE MEDICAL LIBRARY



3 9002 07959 4751

YALE UNIVERSITY  
LIBRARY



LIBRARY OF  
THE SCHOOL OF  
MEDICINE

Section on Odontology  
Carnegie Foundation Fund

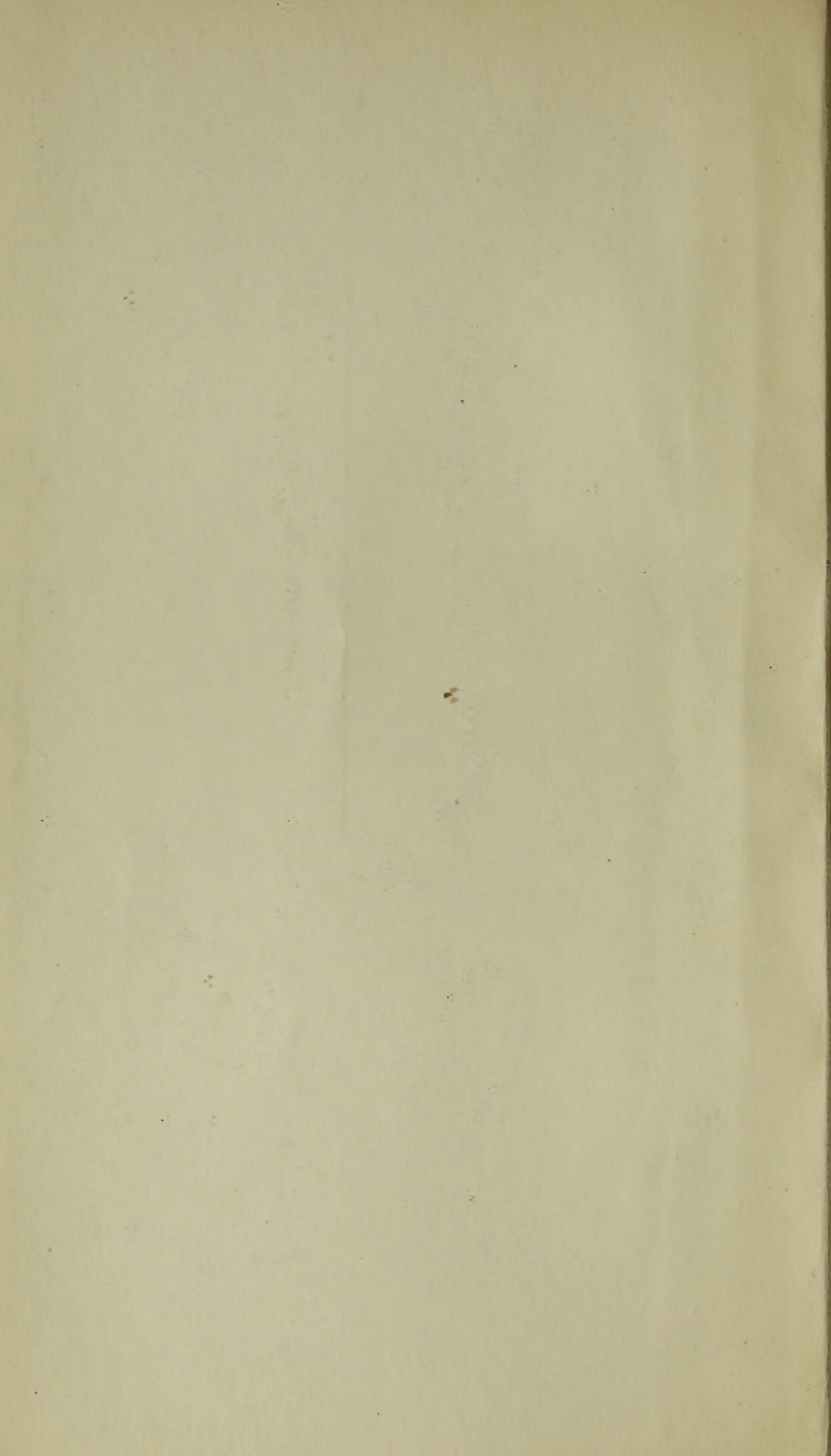














THE  
DENTAL COSMOS:

A  
MONTHLY RECORD OF DENTAL SCIENCE.

*Devoted to the Interests of the Profession.*

EDITED BY  
EDWARD C. KIRK, D.D.S.

---

Observe, Compare, Reflect, Record.

---

VOLUME XLIV.

PHILADELPHIA:  
THE S. S. WHITE DENTAL MANUFACTURING CO.,  
CHESTNUT STREET, CORNER OF TWELFTH.

1902.

# DENTAL COSMOS

MONTHLY RECORD OF DENTAL SCIENCE

Published in the interests of the Profession

EDWARD C. KIRK, JR.

Editorial and Business Manager

NEW YORK

THE DENTAL COSMOS

Vol. 2, No. 1, January, 1901

Published monthly, except in winter

1901



# CONTENTS OF VOLUME XLIV.

## ORIGINAL COMMUNICATIONS.

Adenoids .....	574	"Extension for Prevention"....	914
Alveolar Abscess (A) Opening upon the Outside of the Face, Caused by Death of the Pulp in a Third Molar Independent of Caries .....	562	Further Remarks on "Leptothrix Racemosa" According to Mr. Kenneth Goadby, of London .....	673
Animal Alkaloids .....	1128	Histology of the Maxillary and Mandibular Bones .....	549
Answer (An) to Dr. Hofheinz, 1232		Horoscope (The) of Dentistry.	332
Artificial Dentures, with Special Reference to the Impression, Taking the Bite, and Articulation .....	446	Human Speech (The) and Articulate Speech Divine.....	322
Asepsis .....	686	Hygiene (The) of Bridge-Work as Exemplified by a Piece of Removable Porcelain Bridge.	1005
Broken Vulcanite Denture, To Adjust the Parts of and Get a Model of the Same.....	340	Hygienic Fillings .....	1245
Building (The) of Contour Amalgam Fillings in Molar Teeth .....	1238	Ideal Bicuspid Crown (An)....	328
Case (A) of Erosion .....	929	Impressions .....	825
Case (A) of Porcelain Bridge-Work .....	704	Inlays—Porcelain and Gold....	811
Cavity Management in Connection with the Contour Matrix.	681	International Anatomical Dental Nomenclature, with Symbols to be Used in Formulæ.	115
Cements .....	1023	Legal Identification (A) .....	1029
Classroom Methods of Teaching .....	460, 695, 705	Little Things .....	587
Cleft-Palate Case (A).....	571	Makers (The) of Dentistry....	1105
Combination (A) of Plain and Gum Teeth .....	329	Management of the Infirmary Clinic in Dental Schools....	309
Comparative Value (The) of Ordinary Sealings for Root-Canal Dressing as Excluders of Bacteria .....	925	Metal Ligature in Orthodontia.	454
Conservative Treatment in Orthodontia .....	225	Metallurgy: How to Teach It..	699
Continued Anesthesia with Nitrous Oxid, Under Definite Pressure .....	16	Necrosis of the Maxilla.....	582
Contour Matrix (The) .....	830	Next Step (The) in the Prevention of Caries .....	334
Dental Prophylaxis .....	584	Non-Cohesive <i>versus</i> Cohesive Gold for Cervical Margins..	569
Educational Systems .....	1132	Oral Hygiene .....	1020
Errors in Diagnosis .....	1248	Oral Sepsis, Necrobiosis, Antisepsis, and Prophylaxis .....	219
Esthetics in Operative Dentistry .....	580	Origin (The) of Ideas and Inventions, with Comments on Methods .....	819
		Orthodontia as a Specialty ....	905
		Past (The) and Present in Dentistry .....	316
		Porcelain as an Art in Crown-Work .....	106
		Porcelain Enamel .....	456
		Porcelain Inlay Work .....	25

Porcelain Roots .....	919	Some Observations in Connection with Pyorrhea Alveolaris .....	827
Presence of Bacterial Plaques on the Surface of the Teeth, and Their Significance .....	425	Statistical Study (A) of Local Anesthesia in Dentistry .....	22
Professional Education in America and Europe.....	234	Study (A) in Bleaching Teeth..	101
Pyorrhea Alveolaris, with Special Reference to Practical Medicine .....	1	Study (A) of Comparative Occlusion and Its Bearing upon Orthodontia .....	9
Recent Progress and Present Condition of Dentistry in Japan .....	805	Suggestive Therapeutics .....	589
Restoration of the Incisive Edges of the Anterior Teeth with Porcelain .....	1137	Taking Plaster Impressions of Mouths in Which the Teeth Form Undercuts. A New Method, Securing Governance of Fracture .....	559
Root-Fillings and Their Relative Value .....	910	Teaching (The) of Bacteriology .....	715
Septic Gingival Catarrh: Disease of the Gum Borders and Sockets of the Teeth.....	119	Teaching (The) of Prosthetic Dentistry .....	709
Shock (The) of Dental Operations .....	690	Test Tube (A) for Sterilizing Eucaim Solutions .....	463
Should the So-Called Fundamental Branches in the Study of Dentistry and of Medicine be Taught by the Same Faculty? .....	1011	Treatment of Devitalized Teeth, Use (The) of Hot Carbolic Acid .....	245
Some Experiments with Trichloracetic Acid .....	458	What Chemical Influence Has Saliva on Cement? .....	564
		Will Nitrous Oxid and Oxygen Supplant Ether and Chloroform in General Surgery and Nitrous Oxid Alone in Dental Surgery? .....	209

## CORRESPONDENCE.

Anesthesia Demonstration(The) at the Indianapolis Meeting..	246	Interstate Examinations for Dentists .....	246
Charge (A) of Plagiarism..	125, 340	Japanese Dentistry .....	930
General Anesthesia Induced by the Application of a Local Anesthetic .....	1034	Remonstrance (A) from India..	464
		Why This Attack? .....	341

## PAPERS IN SOCIETY PROCEEDINGS.

Amalgam: The Place It Has Won in Dentistry .....	361	Dental Cements and the Cause of Their Failure as Filling Materials .....	1058
Analgesics in Oral and Minor Surgery .....	476	Dentist's (The) Duty to His Patient .....	616
Anesthesia .....	971	Electric Ozonation in the Treatment of Neuralgia .....	1183
Apathy in the Dental Profession .....	843	Enamel (The) of the Central Incisors .....	183
Artificial Molar (An) and its Functions .....	1044	Ethical Relation (The) of Dentist to Patient .....	611
Basis (The) of Dental Medicine .....	853	Ethics .....	743
Brophy Operation for Cleft Palate .....	973	Ethnographic Odontography..	1184
Care (The) of Children's Teeth	959	Fast and Slow Separation: Lesions Incident Thereto When Overdone .....	738
Cavity Preparation .....	262, 264	Fracture of the Jaw; A Report of Two Cases .....	166
Cocain in Pulp-Extirpation.....	275	Further Antrum-La Grippe Considerations .....	736
Consideration of the Conditions of the Interproximal Space...	163		
Crown- and Bridge-Work: Baird Method of Making Crowns...	1053		



"Hammer and Nails" .....	867	tion of Gold Foils; Cohesive versus Non-Cohesive .....	1048
How I Apply Some Theories of Cavity Preparation .....	266	Practical Cases of Diseased Antrum .....	253
Idea (An) in Crown-Work.....	390	Preparation of Cavities for Por- celain .....	377
Improvement (An) in Inter- dental Splints .....	1066	Pyorrhea Alveolaris .....	348
Indications for Extracting the "Sixth-Year" Molar.....	964	Science as a Teacher of Propy- laxis .....	502
Inflammatory Affections of the Antrum of Highmore .....	249	Scientific Mention (A) of a Primary Law that Necessi- tates Extension for Preser- vation .....	167
Inflammatory Phenomena Due to an Unerrupted Third Molar.	156	Should Children's Teeth be Filled with Gold? .....	1184
Lower Impressions and Cushion Lower Plates for Special Work .....	747	Some Additional Light on the Etiology of Pyorrhea Alve- olaris .....	359
Modern Crown- and Bridge- Work .....	1062	Some Considerations in Mod- ern Bridge-Work .....	54
National Dental Certificate of Qualification .....	1070	Some Embarrassing Educa- tional Problems .....	277
New Hemostatic (A) .....	1189	Some Methods Used in Gold Fillings .....	151
On the Management of the Per- manent Superior Incisors and Bicuspidis .....	158	Some Peculiar Cases of Extrac- tion .....	372
Oral Hygiene .....	386	Some Questions and Some Sug- gestions .....	493
Our Next Forward Movement: Teaching Dental Hygiene....	1039	Some Things Dentists Know Little About .....	961
Partial Review of the Current Literature on Orthodontia... ..	950	Status (The) of the Dental Pro- fession .....	485
Plan (A) for the Furtherance of Scientific Research and the Elevation of Our Profession by Affiliation with the Car- negie Institute of Washing- ton, D. C. ....	753	Suppurative Processes Invol- ving the Maxillæ .....	931
Points in Teaching Hygiene. . .	1035	Surface Markings upon Teeth... ..	367
Porcelain Work: General Con- siderations .....	1169	Treatment of Roots of Teeth with Putrescent Pulp.....	959
Possibilities in the Condensa-		X Rays in Dentistry .....	1260

## PROCEEDINGS OF SOCIETIES.

Alumni Association, New York College of Dentistry .....	287	Eastern Dental Society of the City of New York .....	623
Annual Convention of the Sixth, Seventh, and Eighth District Dental Societies of the State of New York ....	167, 275, 359, 611	First District Dental Society, State of New York .....	493
Birmingham (Eng.) Dental Students' Society .....	191	Foreign Relations Committee, N. A. D. F. ....	1191
California State Dental Asso- ciation .....	1072	Georgia State Dental So- ciety .....	762, 873
Canadian Dental Association....	1277	G. V. Black Dental Club of St. Paul .....	873
Central Dental Association of Northern New Jersey .....	288	Hartford Dental Society.....	1276
Colorado State Dental Asso- ciation .....	873	Harvard Dental Alumni Asso- ciation .....	872
Council of Dental Surgeons of New Brunswick .....	1073	Harvard Odontological Society.	395
Dental Society of the State of New York .....	753, 832, 1147	Illinois State Dental Society...	761
District of Columbia Dental So- ciety .....	289, 960, 1066, 1163	Institute of Dental Pedagogics.	289
		International Dental Federa- tion .....	34, 126, 1139
		Iowa State Dental Society...	248, 465
		Kansas State Dental Associa- tion .....	623

Lowell, Mass., Dental Society..	395	Ohio State Dental Society.....	71
Maritime Dental Association....	1276	Ohio Valley Dental Society.....	624
Maryland State Dental Association .....	375, 485, 969, 1066, 1163	Ontario Dental Society.....	958, 1058
Missouri State Dental Association .....	761	Pennsylvania Association of Dental Surgeons .....	70, 1275
National Association of Colored Dentists .....	872	Pennsylvania State Dental Society .....	50
National Association of Dental Examiners .....	976	Philadelphia Academy of Surgery .....	288
National Dental Association—Committee on Oral Hygiene in Public Schools .....	400	Reading, Pa., Dental Society...	192
National Dental Association—Southern Branch .....	150	San Diego, Cal., Dental Society .....	623
385, 592, 717, 843, 938, 1035, 1143		Seventh District Dental Society of the State of New York....	736
New Brunswick Dental Society .....	1072	Société Odontologique, Paris..	762
New England Alumni Association of the Philadelphia Dental College .....	287	Southern Dental Society of New Jersey .....	288
New England Association of Dental Examiners .....	624	Southwest Virginia Dental Society .....	1275
New Jersey State Dental Society .....	1181	Tennessee Dental Association..	975
New York Odontological Society .....	39, 272, 342, 605, 852	Tri-State Dental Meeting of the Ohio, Michigan, and Indiana Dental Associations...	54, 135, 748
Northeastern Dental Association .....	500, 729, 867, 931, 1048	Union Meeting of the Maryland State Dental Association and the District of Columbia Dental Society .....	969, 1066, 1163
Northern Iowa Dental Society.	1073	University of Pennsylvania, Dental Department .....	288
Odontographic Society, Chicago .....	192	Wisconsin State Dental Society .....	975

## DENTAL COLLEGE COMMENCEMENTS.

Atlanta Dental College.....	625	Medico-Chirurgical College, Dental Department .....	765
Baltimore College of Dental Surgery .....	633	Milwaukee Medical College, Dental Department .....	875
Baltimore Medical College, Dental Department .....	632	National University, Dental Department .....	764
Chicago College of Dental Surgery .....	634	New Orleans College of Dentistry .....	624
Cincinnati College of Dental Surgery .....	628	New York College of Dentistry	635
College of Dentistry of the University of Minnesota....	875	New York Dental School.....	875
College of Physicians and Surgeons, Dental Department...	876	North Pacific Dental College...	766
Colorado College of Dental Surgery .....	763	Northwestern University Dental School .....	764
Columbian University, Dental Department .....	762	Ohio College of Dental Surgery .....	626
Dental College, Ohio Medical University .....	630	Pennsylvania College of Dental Surgery .....	626
Detroit College of Medicine, Dental Department .....	763	Philadelphia Dental College....	630
Howard University, Dental Department .....	627	Pittsburg Dental College.....	630
Kansas City Dental College....	629	Tufts Dental College School...	877
Keokuk Dental College .....	632	University of Buffalo, Dental Department .....	625
Lincoln Dental College .....	636	University of Illinois, School of Dentistry .....	634
Louisville College of Dentistry.	629	University of Iowa, College of Dentistry .....	876
		University of Maryland, Dental Department .....	628

University of Michigan, College of Dentistry .....	874	University of Tennessee, Dental Department .....	632
University of Omaha, Dental Department .....	633	Vanderbilt University, Department of Dentistry .....	876
University of Pennsylvania, Department of Dentistry .....	766	Western Dental College .....	764
University of Southern California, College of Dentistry.....	763	Western Reserve University, Dental Department .....	874

## EDITORIAL.

Chemistry (The) of Tooth-Bleaching .....	196	Navy Dental Bill (The) ....	194, 403
Chinese Mode of Extracting Teeth .....	198	Passing of the First Graduating Class in Dentistry.....	520
Constitutionality of the Pennsylvania Dental Law .....	292	Place Them on the Free List...	196
Correction (A) .....	75, 521	Plaster of Paris .....	1195
Defective Standard (A) of Skill.	404	Prof. Dr. W. D. Miller.....	770
Dentistry and the Carnegie Fund .....	768	Recent Legislation and the D.D.S. Degree .....	977
Development (The) of Dental Literature .....	636	Reply to the Secretary of the Committee on Foreign Relations of the N. A. D. F. ....	1193
Fourth International Congress (The) .....	976	"Same Old Thing" (The)—Its Cause and Treatment .....	877
Higher Entrance Standard (A).	516	Sialo-Semeiology .....	639
Important Legal Decision (An)	980	Suggestion (A) in Dental Education .....	1281
Legacy (The) of 1901 to 1902...	72	To the Dental Novitiate—Greeting .....	1073
"Mischief-Breeding Neglect" (A) .....	296		

## BIBLIOGRAPHICAL.

Aids to Dental Anatomy and Physiology .....	1077	Our Teeth: How To Take Care of Them .....	523
Anatomy and Histology of the Mouth and Teeth.....	1200	Outlines of Anatomy .....	412
Answers to Questions Prescribed by Dental State Boards .....	770	Practical Guide (A) to the Administration of Anesthetics...	409
Books Received .....	412, 639	Practical Manual (A) of Bacteriology for Physicians and Students .....	773
Care (The) of the Teeth.....	1284	Principles and Practice of Operative Dentistry .....	77
Dental Questions and Answers on Temperaments .....	1078	Proceedings of the Third International Dental Congress, Paris, 1900 .....	1077
Dental Surgery, Including Special Anatomy and Pathology..	297	Questions and Answers, Embracing the Curriculum of the Dental Student, Divided into Three Parts .....	76
Diseases and Injuries of the Teeth, Including Pathology and Treatment .....	774	Regional Anatomy of the Head and Neck .....	410
Local Anesthesia and its Application to Dentistry.....	773	Text-Book (A) of Surgical Principles and Surgical Diseases of the Face, Mouth, and Jaws, for Dental Students....	1198
Manual of Chemistry: A Guide to Lectures and Laboratory Work for Beginners in Chemistry .....	521		
Notes on Materia Medica.....	1078		
Orthodontia .....	409		

## OBITUARY.

Ames, Aaron .....	982	Caldwell, George W.....	299
Barber, Heber B.....	414	Callahan, Andrew M.....	1079
Barker, Charles C.....	80	Currie, Herbert D.....	1202
Buchanan, Rice R.....	881	Doud, Albert .....	413



Elliott, Alban Vaughan .....	982	Lord, Benjamin .....	641
Essig, Charles J. ....	78	Mackall, Richard C. ....	523
Frisselle, Marcellus Mason. ....	644	Noble, Henry Bliss .....	413
Harris, John A. ....	1201	Patterson, Callender .....	199
Hill, Orville E. ....	775	Richmond, Cassius M. ....	643
Holland, S. G. ....	1079	Robinson, Henry A. ....	414
Hunt, Ralph S. ....	524	Seymour, Geo. S., Resolutions of	
Hurlbut, J. Searle .....	1285	Regret .....	1202
Johnson, Oliver .....	1286	Swap, Franklin .....	1080
Kingsley, Albigeance Waldo. ....	776	Wetherbee, Isaac Josiah. ....	880, 983

# REVIEW OF CURRENT DENTAL LITERATURE.

Accidental Opening of the Healthy Antrum .....	886	Extract of Suprarenal Capsules (Use of) in Dentistry. ....	1086
Action of Tobacco Smoke upon Certain Microbes of the Mouth	651	Facial and Dental Harmony .....	527
Acute Poisoning with Cocain. ....	892	Facial Prosthesis .....	526
Adrenalin a Valuable Aid in Sur- gical Work upon the Mucous Surfaces .....	779	Filling of Incompletely Developed Root-Canals .....	777
Alveolar Abscess: Its Complica- tions and Treatment. ....	891	Forcing Out of a Tooth by Trau- matism, and its Reimplantation Twenty-one Hours After .....	1206
Alveolar Abscess Perforating the Palate .....	885	Fracture of the Lower Jaw (A Case of) .....	788
Anesthesia with Ethyl Bromid. ....	525	General Anesthesia in the Ple- thoric .....	650
Anomalous Tumor from the An- trum .....	884	General Infections Produced by Staphylococcus Aureus and by the Streptococcus .....	527
Articulation of Artificial Den- tures, and Retention of These in Edentulous Cases .....	528	Guaiacol in Extraction of Teeth. ....	784
Blue Light as an Anesthetic. ....	526	Hypnotism in Dentistry .....	1203
Bridge Anchorage Without Band or Crown .....	651	Iodin as a Cause of Epithelioma	788
Case (A) of Arsenical Necrosis. ....	1287	Iodo-Sulfur or Iodized Sulfur. ....	1295
Case (A) of Replantation .....	890	Large Salivary Calculus in the Submaxillary Gland; Diagnosis of by the X Rays. ....	525
Casualty During Extraction. ....	985	Lesions of the Mouth .....	530
Cement Treatment (The) of Painful Caries of the Second Degree .....	1287	Making Models by a New Method .....	1089
Chemical Light in Dentistry. ....	986	Method of Removing Cemented- In Crown-Pins by Chemical Means .....	1203
Chloroform Anesthesia (A Few Considerations upon) .....	647	Neuralgia of the Tongue .....	650
Clinical and Chemical Study of a Case of Dental Erosion. ....	889	Noma, Etiology of .....	652
Comparative Value of Cocain and Eucaïn .....	531	Notes on a Case of an Unerrupted Second Molar in a Patient Aged Fifty-six .....	1085
Contribution to the Study of Maxillary Cysts .....	649	Old Roman Dental Instruments from Saalburg Museum .....	1292
Crowns Without Bands .....	777	Orthodontia and its Relation to Temperament .....	788
Diagnosis in Dental Practice. ....	787	Osteomyelitis of Dental Origin in the Inferior Maxilla Compli- cated with Tic Douloureux of the Lower Lip. ....	779
Diseases of the Maxillary Sinus and Treatment by the Dentist. ....	782	Palatal Paralysis .....	1083
Employment of Ethyl Chlorid as an Anesthetic .....	989	Paraffin Prosthesis .....	646
Epidemics and Their Treatment. ....	525	Phosphor-Necrosis .....	651
Erroneous Localization of Pain in Dental Disorders .....	1081	Physical Diagnosis as Related to College Curricula .....	983
Ethyl Chlorid as a General Anes- thetic .....	1204	Plastic Fillings of Metallic Salts. ....	989
Etiology of Dental Disease. ....	988	Porcelain Inlays .....	529
Extent and Exigencies of Dental Instruction .....	887	Powdered Charcoal as a Treat- ment for Hemorrhage follow- ing Tooth-Extraction .....	526

Preliminary Anesthesia by Nitrous Oxid .....	984	Pharyngeal Lymphoid Tissues (Adenoids) with Special Reference to Primary Tuberculosis of the Pharyngeal Tonsil .....	781
Premature Eruption of Teeth...	883	Study (A) of the Teeth after Death from a Medico-Legal Standpoint .....	1292
Preventive Dentistry .....	1206	Symmetrical Extraction of the First Permanent Molars. Is it a Justifiable Operation?.....	645
Prosthesis of the Skeleton .....	1082	Submental Sinus, a Sequela of Influenza, Treated by Root-Filling .....	528
Pyorrhea Alveolaris .....	885, 1086	Surgical Correction of Malformation and Speech Defects Due to or Associated with Hare-lip or Cleft Palate .....	652
Quinin as an Antiseptic and Hemostatic .....	886	Technic (The) of Applying Cathaphoresis Successfully .....	1084
Relation of Hereditary Syphilis to Imperfect Dentition .....	648	Tin-Foil, Its Manipulation and its Value as a Tooth-Saver.....	990
Relationship (The) between the State of the Dental System and the Buccal Manifestations in Syphilitics .....	1291	Tooth (The) of a Newly-Born Child .....	893
Removal (The) of Suspicious Growths or Ulcers in the Mouth for Microscopical Examination .....	987	Treatment of Alveolar Abscess by Extraction and Replantation..	1083
Restatement of the Principles of "Extension for Prevention" and Some Correlated Subjects	882	Treatment of a Person who Has Swallowed a Poisonous Dose of Carbolic Acid .....	778
Septic and Polymicrobic Affections .....	784	Treatment of Putrescent Roots with Sulfuric Acid .....	991
Sexuality, Influence of in Tooth-Development .....	529	Tumor of Tooth-Pulp Without Caries .....	1208
Simple Method (A) of Making Zinc Dies of Models with Deep Undercuts .....	1081	Uremic Stomatitis and Its Diagnosis .....	1288
Some Effects of Refinement of Food .....	1088	Use of Calcium Chlorid to Prevent Hemorrhage after Tooth-Extraction .....	986
Some Facts and Conclusions Regarding Erosion .....	1207	Zinc Oxid in Dental Therapeutics	650
Some Thoughts on the Discoloration and Bleaching of Teeth...	1289		
Somnoform .....	525, 892		
Stigmata of Degeneracy in Relation to Dental Irregularities...	530		
Stomatitis Gangrenosa (Noma) .....	531		
Study (A) of Hyperplasia of the			

## PERISCOPE.

Abrasive <i>versus</i> Non-abrasive Substances for Cleaning the Teeth .....	1301	Amalgam, To Make it Adhere to Your Carrier .....	893
Absorption of Teeth in an Adult	85	Ambidextrousness .....	992
Accidents During the Use of Chloroform .....	1212	Anesthesia for the Removal of Foreign Bodies from the Trachea and Larynx .....	1302
Action of Demulcents .....	1211	Anesthesia with Nitrous Oxid in Persons Above Middle Age...	85
Adenoid Vegetations .....	653	Anesthetic Action of Methyl Chlorid .....	1212
Adherent Pieces of Modeling Composition, To Remove from a Plaster Model .....	85	Annealing Gold or Copper.....	893
Adhesive Plaster or Collodion <i>versus</i> Stitches in Mouth-Wounds .....	1210	Anesthetics for Children (Selection of) .....	537
Adrenal Extract .....	789	Antidote for Cocain.....	1297
Adrenalin Chlorid in Dental Surgery .....	1296	Arsenical Paste (To Color)...	893
Advantages of the Use of Hand Pressure .....	1299	Artificial Larynx (An) .....	203
Advisability of Excluding Carbolic Acid from Arsenical Pastes .....	1299	Automatic Tongue-Retractors .....	1211
		Babbitt Metal .....	991
		Baby Ribbon for Contouring Amalgam Fillings .....	532
		Backing Teeth in the Making of Crowns or Dummies .....	84

Bad Teeth a Cause of Intemperance .....	1301	Creolin .....	83
Band Does Not Prevent the Splitting of Root.....	895	Criterion of the Value of Professional Services .....	415
Bifid Tongue (A Case of).....	87	Crowning of Teeth Having Living Pulp.....	895
Bleaching Enamel .....	202	Crowns for the Anterior Teeth..	994
Blisters .....	1297	Curious Case (A) .....	896
Books Alone but a Minor Factor in Developing Manual Skill..	993	Curious Symptoms Following Tooth-Extraction .....	89
Boric Acid Poisoning (Two Cases of) .....	417	Dangers in Gelatin Injections...	654
Borax Solution for Soldering...	87	Dangers of Chloroform Anesthesia in England .....	996
Breslau Institute .....	532	Dangers of Extreme Aseptic Methods .....	994
Broaches (Use of) in Posterior Teeth .....	653	Decay Recurring at the Margins of the Gums or Around Fillings (To Stop) .....	83
Broken Vulcanite Plate (To Wax Together) .....	203	Definition of the Word "Profession" .....	653
Brushing the Tongue .....	894	Deflection of the Nasal Septum...	993
Buccal and Large Approximal Cavities in Bicuspids and Molars (Ideal Method of Filling)	88	Delusive Condition in Shock...	654
Burns (Treatment for) .....	533	Dental and Race Degeneracy Connected .....	894
Calcium Peroxid as a Disinfectant for Carious Teeth .....	533	Dental Caries (At What Stage in the Process of) Should We Operate? .....	416
Cancrum Oris in an Asylum....	534	DENTAL COSMOS Report of the Third International Dental Congress at Paris, 1900 .....	416
Candle Power (A) .....	991	Dental Prophylaxis .....	790
Carbuncle (Treatment of) .....	656	Dental Operations (Priority in).	86
Castor Oil .....	416	Dental Specialists .....	997
Cellulitis Due to an Alveolar Abscess (Treatment for) .....	656	Dentistry in America (Appreciation of) .....	654
Cement in the Construction of Seamless Crowns .....	992	Deterioration in Molten Zinc Obviated .....	534
Changing the Shade of a Porcelain Tooth .....	299	Devitalization of Pulp Refractory to Arsenic.....	535
Chemical Test for Calcium Dioxid .....	532	Devitalizing Paste .....	200
"Chiaie Teeth" .....	300	Devitalizing Teeth .....	991
Chloral Hydrate as a Vesicant..	1209	Diagnosing Caries .....	535
Chloroform and Ether Anesthesia,	1213	Difference between Direct and Alternating Currents .....	1296
Chloroformization of Patients Suffering from Cardiac Disorders .....	657	Dionin .....	1212
Cleaning of Teeth in Sleeping Cars .....	655	Disinfection of Surgical Instruments by Spirit of Soap.....	656
Clouding of Mouth-Mirrors (To Prevent) .....	655	Drainage for Cavities Containing Thick Pus .....	992
Cocain, Nature of the Toxic Action of .....	84	Drilling Glass or Porcelain....	81
Coffee as an Antidote for Cocain Poisoning .....	81	Drug-Eaters .....	537
Complete Necrosis of the Ramus of the Mandible Consecutive to an Acute Osteitis of Dental Origin .....	89	Early Recognition of the Value of Manual Training in Dentistry .....	536
Congenital Absence of Temporary Teeth .....	200	Epithelioma of the Maxilla Arrested by Injections of Nectrianin .....	90
Controlling Nervous Patients...	996	Erosion of Dentin .....	1297
Coppering Brass (Method of)..	86	Ethyl Chlorid in Cold Weather..	200
Condensation of Gold .....	994	Ethyl Chlorid (Rapid Anesthesia by) .....	87
Counter Dies (To Prevent from Sticking) .....	81	Etiology (The) of Noma .....	1298
Counter-irritant Preparation....	1297	Evils Resulting from the Presence of Dead Teeth in the Mouth .....	995
Cracking Porcelain Facings (To Lessen the Danger of).....	81		



Exposed Pulp (Treatment of Odontalgia from) .....	655	Ichthyol a Compound .....	1209
"Extension for Prevention" (Proper Application of) .....	419	Immediate Extirpation of Pulp..	202
Facial and Oral Deformities in Early Life .....	534	Importance of Attending Dental Society Meetings .....	1210
Facial and Palatal Restoration..	201	Importance of Familiarity with the Particular Anesthetic Used, ..	1209
Facial Neuralgia due to a Hair Irritating the Membrana Tympani .....	85	Impressions of Mouths with Undercut Teeth (How to Take)..	84
Fahrenheit to Centigrade .....	1299	Impressions of the Face .....	790
Famous Tooth (A) .....	300	Indications for the Use of Chloroform .....	896
Faulty Crowns .....	896	Individuality in Dental Operations .....	992
Finishing Rubber Plates.....	1296	Infantile Pathology at the Period of Deciduous Dentition .....	420
Fire (A Strange Cause of).....	85	Infantile Scorbutus .....	535, 894
Fœtid Breath (Mouth-wash for)	534	Infantile Scurvy .....	417
Formalin .....	200	Influence of Alcohol upon the Natural Resistance .....	536
Formalin as a Disinfectant for the Hands .....	792	Injection of Colored Vaseline in Surgical Prosthesis .....	83
Formalin-Poisoning (A Case of)	1300	Intra-rhachidian Anesthesia ...	533
Foul Breath (Remedy for) .....	415	Irritation of the Gums Incident to the Scaling and Polishing of Teeth .....	894
Further Suggestions to Anesthetists .....	897	Japanese Method of Narcosis.....	1213
Gargle for Catarrh and Hoarseness from Cold in the Throat..	789	Jaws, Compound Fracture of Both .....	89
Gargle for Offensive Breath.....	84	Lasting Anesthesia .....	653
Gelatin as a Hemostatic.....	415, 789	Lead Line upon the Gums an Important Factor in the Diagnosing of Lead Poisoning .....	87
Geranium (Fluid Extract of) as a Hemostatic .....	82	Ligating Teeth, Care Necessary in .....	81
German Silver, Regulating Bands etc. (To Polish) .....	896	Light, What Kind is Most Injurious to the Eyes?.....	535
Glossitis Caused by a Lower Third Molar .....	90	Linear Determination of the Human Tooth-Form .....	301
Gold Fillings (One of the Oldest on Record) .....	415	Little that is New Under the Sun	790
Gold (To Make it Cohere Under All Conditions) .....	202	Local Application for Toothache	83
"Good Fit" in Inlays .....	535	Local Styptic (A) .....	81
Guaiaicol in Dentistry .....	201	Lupus of the Face (A Case of) Treated with Ichthyol-Sodium, ..	1211
Hands, Is It Possible to Render Them Aseptic? .....	299	Lycopodium an Explosive.....	299
Hardening Plaster of Paris....	792	Making of Upper Dentures (Essentials to Success in).....	84
Healing of Wounds in the Mouth	895	Method of Drawing Temper from Swiss Broaches used in Preparing Root-Canals .....	84
Hematuria and Gingival Hemorrhage Treated with Turpentine	82	Molar (A) in the Maxillary Sinus .....	87
Hemophilia (Treatment of with Calcium Chlorid).....	654	Morbid Growths of the Palate...	82
High Privilege (A) .....	894	Most Practical Thing (The)....	789
Honesty and Thoroughness <i>versus</i> Quackery and Advertising .....	1212	Mouth-wash, Formula for....	82, 416
Honey for the Treatment of Burns .....	654	Mummifying Pastes (About)....	418
How to Avoid the Necessity of Vacuum Chambers .....	1298	Mutilation of Teeth .....	420
How to Clean Blood-Stains from Fabrics and Instruments.....	201	Naphthalin in the Manufacture of Celluloid .....	415
How to Clean Burs .....	201	Nargol in the Treatment of Empyema of the Antrum.....	202
Hydrogen Dioxid (Precautions Necessary with).....	88	Natural Color Effects in Artificial Teeth .....	419
Hydrogen Dioxid (To Keep)....	532	Nature of the Attachment of an Implanted Tooth .....	790
Hypnotism and Dentistry.....	997		
Hypodermic Needle (To Prevent Rusting of Inside of)....	299		

Necessity of Medical Knowledge for the Dentist .....	992	Preservative Action of Tin.....	533
Necrosis of the Lower Jaw, Following an Attack of Scarlet Fever .....	894	Prevention of Chloroform Vomiting .....	789
Nervocidin .....	790	Prevention of X-Ray Burns....	1296
New Anesthetic (A) .....	1210	Primary Treatment of Infected Wounds with Tincture of Iodin	300
New Silver Salts .....	1210	Properties a Tooth-powder Should Possess .....	893
New Test (A) for Formaldehyd in Milk .....	656	Prophylaxis Against Infection...	82
Non-Cohesive Gold in Cylinders.	994	Proportion of Children with Defective Teeth .....	1296
Nose Surgery .....	653	Protargol .....	81
Obtundent for Sensitive Dentin,	1210	Protection for Engine Hand-pieces .....	533
Odontalgia .....	653, 655	Pulp-Devitalization in Deciduous Teeth .....	532
Odor of Iodoform (How to Remove from the Hands).....	653	Pulpless Teeth (Treatment of).	654
Old Amalgam Filling (An)....	790	Quinin as a Styptic and Antiseptic .....	792
Opening of the Sphenoidal Sinus through the Healthy Antrum..	88	Range of Vision .....	993
Orthoform .....	1300	Rapid Method (A) of Producing Regulating Plates or Artificial Dentures in Hard Rubber ....	300
Origin of Dental Hygiene.....	1210	Rare Cases of Plumbism.....	894
Osmosis (The) of Cocain through Dentin .....	1298	Reflex Value of Work with the Microscope .....	419
Our Invisible Foes.....	655	Relief of Toothache from Inflamed Pulp .....	299
Oxyphosphate Cements, Their Action upon the Dental Pulp..	655	Removal of Plaster Impressions.	896
Painless Applications of Mercury Bichlorid Solution to Mucous Membranes .....	1297	Removal of Pulp Remnants....	894
Painless Insertion of Crowns...	895	Removal of Swallowed Bodies..	654
Papain .....	534	Repairing Rubber Work.....	653
Partial Third Dentition .....	656	Replacing Facing (A Quick Method of) .....	1301
Perfect Occlusion .....	995	Repolishing an Entire Gold Piece after Repairing (To Avoid)...	415
Perfect Teeth in Ancient Times.	790	Resistance of Germs to Light....	1298
Phosphor-Necrosis Simulated by a Disease among Workers in Gutta-Percha .....	86	Retardcd Eruption of a Canine..	83
Physiological Function of the Pulp .....	1298	Rinsing the Mouth after Extraction (Inadvisability of).....	83
"Physiological"—Its True Meaning .....	1297	Roots Destroyed by Crowning...	995
Placing Rubber Dam on Badly-Decayed Teeth (To Facilitate)	993	Rubber and Aluminum Plates...	82
Pneumococcus, a Common Inhabitant of the Oral Cavity...	83	Rubber Dam in All Operations..	992
Point (A) about Cement Fillings	897	Rubber Dam, Why It Should Always be Applied .....	417
Points in Socket Handles (To Fix) .....	1211	Rubber Plate (To Mend a).....	992
Poorly Adjusted Bands .....	1299	Sandarac Varnish .....	789
Potassium Nitrate in Scurvy....	81	Sandpaper and Rubber Disks Catching the Rubber Dam (To Prevent) .....	82
Potassium Permanganate Solution for Toothache .....	653	Saliva a Natural Protector Against Dental Caries .....	536
Potassium Permanganate (Incompatibilities of) .....	654	Save Your Disks and Finishing Strips .....	1298
Potassium Sulfate in Investing Materials .....	81	Sensitive Dentin (Treatment)	87, 791
Precautions to be Used in the Manipulation of Cohesive Gold	993	Severe Case (A) of Carbolic Acid Gangrene .....	997
Precocious Tooth-Eruption.....	532	Shedding of Teeth as a Tabetic Arthropathy .....	82
Preparation of Cavities .....	893	Silver Solder (Formula for)....	81
Preparation of Steel for Regulating Appliances .....	82	Silver Vitellin .....	894
Preservation of the Teeth of School-children .....	897	Singular Fatality (A) .....	82

Skill Necessary for the Construction of Artificial Dental Substitutes .....	994	Syphilitic Infection in the Course of Surgical Operations.....	1301
Soapstone .....	993	Temperament a Factor in the Selection of Teeth .....	1300
Special Degree (A) .....	1209	Therapeutic Value of Gutta-Percha .....	201
Sodium Bicarbonate in Anesthesia .....	653	Three Important "Don'ts" .....	789
Sodium Dioxid, Its Analogy to Hydrogen Dioxid .....	83	Tincture of Iodin .....	992
Solder for Aluminum .....	1300	Tin Filling Sixty Years Old ...	533
Soreness of Gums (To Prevent) from the Application of Clamps to Teeth .....	789	"Tin-Gold" an Excellent Material for Filling Teeth .....	533
Special Anesthesia .....	416	Toothache Drops .....	532, 1297
Start Right! .....	655	Tooth to be Filled with Gold; Necessity of Keeping It Perfectly Clean .....	200
Steel (Bending Force of).....	418	Treatment of Opium Narcosis ..	1209
Steel (To Anneal) .....	201	Treatment of Thrush by a Sucking-Bag .....	1210
Steel (How to Protect It from Rust) .....	633	Varnish (A) for Plaster Models	893
Steel Instruments (To Reharden), .....	992	Vesication by Means of Chloral Hydrate .....	653
Steel Pens (To Keep from Rusting) .....	653	Vomiting after Administration of Chloroform (To Prevent)....	84
Sterilizing the Mouth-Mirror... ..	415	Vulcanization of Large Prosthetic Pieces .....	81
Sticking Stoppers .....	81	Vulcanized Rubber Ear (A)....	535
Subarachnoid Injections of Cocain .....	991	Vulcanizing on Plaster Models..	415
Suction Chambers .....	994	Zinc: Proper Temperature at which to Pour It .....	533
Surgical Asepsis and Antisepsis	418		

DENTAL LEGISLATION.

Arkansas State Dental Law.....	640
--------------------------------	-----

DENTAL SOCIETY ANNOUNCEMENTS.

Alabama Board of Dental Examiners .....	396	Dental Commissioners of Connecticut .....	397, 1215
Alumni Association of Northwestern University .....	194	Dental Exposition in Munich....	400
American Dental Society of Europe .....	662, 796	Dental Society of the State of New York .....	72, 290, 539
American Medical Association—Section on Stomatology.....	538, 660	First District Dental Society of Illinois .....	998
American Society of Orthodontists .....	899, 999, 1097	Florida State Board of Dental Examiners .....	542
Arkansas State Board of Dental Examiners .....	541, 1099	Georgia State Board of Dental Examiners .....	542, 665
Arkansas State Dental Society..	539	G. V. Black Dental Club.....	72
Army Dental Corps .....	543, 1100	Harvard Dental Alumni.....	538, 663
Board of Dental Examiners for Hawaii .....	799	Illinois State Board of Dental Examiners .....	397
Canadian Dental Association, 797, 898		Illinois State Dental Society, 290, 399	
Colorado State Board of Dental Examiners .....	542, 1214	Institute of Dental Pedagogics, 1303	
Colorado State Dental Association .....	663	International Dental Federation and International Commission of Education .....	661, 795
Coming Dental Meetings, 400, 537, 659, 793, 898		Iowa State Dental Society ..	193, 291
Connecticut Odontological Society .....	664, 1304	Kansas State Dental Association, .....	399, 540
Connecticut State Dental Association .....	291	Lebanon Valley Dental Association .....	541
		Louisiana State Board of Dentistry .....	542



Maryland Board of Dental Examiners .....	396, 1099	Pennsylvania Association of Dental Surgeons .....	70
Maryland State Dental Association and District of Columbia Dental Society .....	540, 663	Pennsylvania Board of Dental Examiners .....	396, 665, 1215, 1302
Massachusetts Board of Registration in Dentistry .....	665, 1099	Pennsylvania State Dental Society .....	50, 799
Mississippi Board of Dental Examiners .....	396, 542	Reading (Pa.) Dental Society...	192
Missouri State Dental Association .....	291, 397, 540	Roster of Dental Surgeons, U. S. Army .....	402
National Dental Association, .....	400, 538, 660, 794	Second Italian National Odontological Congress .....	289
National Dental Association—Section IV .....	543, 660, 794	Seventh and Eighth District Dental Societies of the State of New York .....	1098
National Dental Association—Southern Branch .....	72, 193	Seventh District Dental Society of the State of New York .....	291
National Association of Dental Examiners .....	661, 795	Sixth District Dental Society of the State of New York .....	399
National Association of Dental Faculties .....	543, 661, 794	South Carolina State Dental Association .....	399
New England Alumni Association Philadelphia Dental College .....	1097	South Dakota State Board of Dental Examiners, 71, 666, 798, 1302	
New Hampshire Dental Society .....	1214	South Dakota State Dental Society .....	664, 797
New Jersey Board of Dental Examiners .....	666, 798, 1098	Southern California Dental Association .....	998, 1098
New Jersey State Dental Society, .....	193, 540, 664, 797	Southern Wisconsin Dental Association .....	400
New York Odontological Society .....	71, 1303	Tennessee Dental Association, .....	664, 797
New York State Dental Society, .....	72, 290, 539	Texas State Dental Association. .....	290
North Carolina State Board of Dental Examiners .....	543, 665	Tri-State Dental Meeting of the Ohio, Michigan, and Indiana Dental Associations .....	54, 135
Northeastern Dental Association, .....	1098	Vermont Board of Dental Examiners .....	666, 798, 999
Northern Illinois Dental Society, .....	1098	Vermont State Dental Society, .....	194, 291
Northern Indiana Dental Society .....	998	Virginia State Board of Dental Examiners .....	397
Northern Iowa Dental Society, .....	799, 899	Virginia State Dental Association .....	665, 798, 898
Northern Ohio Dental Association .....	71	Washington State Dental Society .....	399
Odontographic Society, Chicago, .....	192, 1303	West Virginia Board of Dental Examiners .....	396, 899
Ohio State Board of Dental Examiners .....	1215	Wisconsin State Dental Society .....	664, 797
Ohio State Dental Society .....	71, 1214		

PUBLISHER'S NOTICE .....

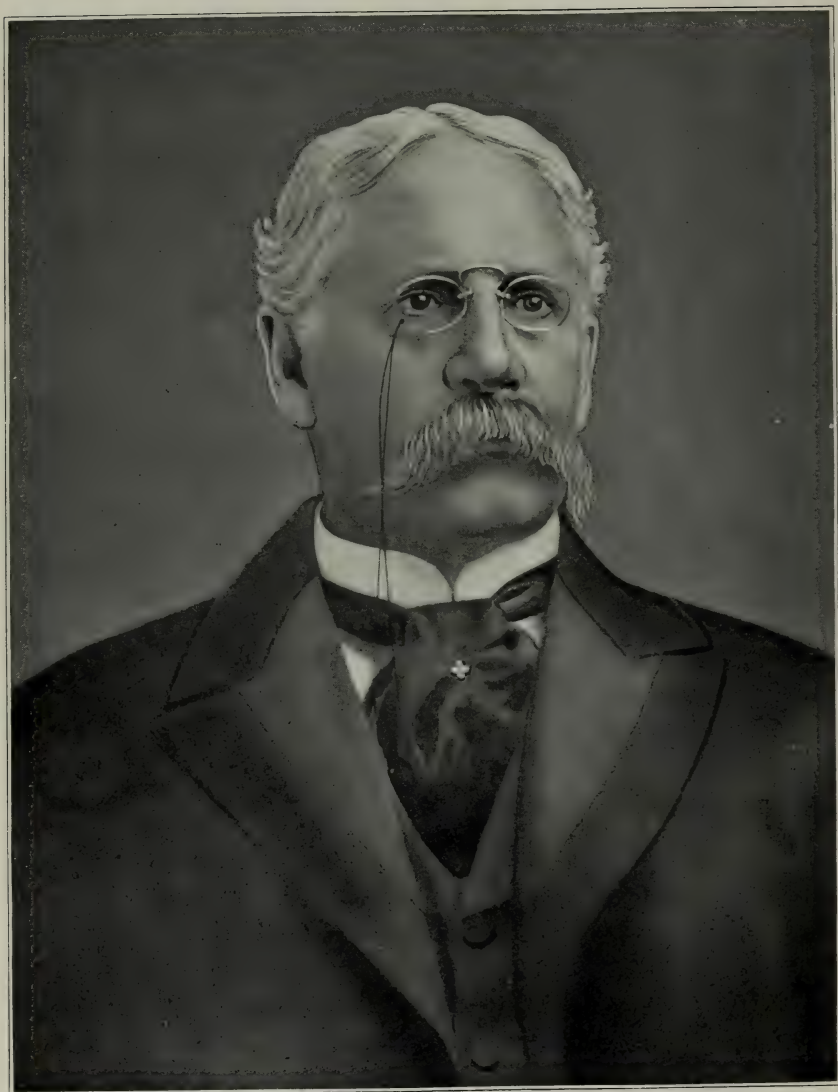
MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE .....

MONTHLY RECORD OF PATENTS RELATING TO DENTISTRY.....

HINTS, QUERIES, AND COMMENTS .....

INDEX TO VOLUME XLIV .....





*Wm. J. Essig*



THE

# DENTAL COSMOS.

---

VOL. XLIV.

PHILADELPHIA, JANUARY, 1902.

No. 1.

---

## ORIGINAL COMMUNICATIONS.

### PYORRHEA ALVEOLARIS WITH SPECIAL REFERENCE TO PRACTICAL MEDICINE.

BY WM. BALDWIN KEYES, D.D.S., LONDON, ENG.

**I** FEEL that I need make no apology for making this somewhat trite and well-worn subject the text for my paper, since the medical profession as a body is just commencing to realize its immense importance in the production of various morbid conditions.

Among dentists much has been written upon the etiology, pathology, and treatment of this very common affection, but mostly from a prosthetic point of view; and its cure has been considered advisable more with a view of preserving the patient's teeth and adding to his personal comfort than with the idea of curing or preserving him from some very serious maladies.

On looking through a series of volumes of any of the leading dental journals one is struck by the amount which has been written upon the subject, and by the speculations as to its probable cause. Of late years the tendency has been to assume a rheumatic or gouty basis for its production, and several very able men have carried out elaborate investigations, with more or less success, with the hope of obtaining material proof of this hypothesis. The deposits upon teeth have been analyzed, and one observer has claimed to have found that they contained uric acid, only to be contradicted by other equally capable workers.

But the tendency of most modern thought is to show that we may have been putting the cart before the horse, and that so far from gout and rheumatism being the cause of the pyorrhea, they are often the effect; and that the general systemic affection is the direct result of the chronic poisoning of the tissues of the patient by the toxins of pus produced by the disease in the mouth.

A most valuable work upon the subject has been recently published by Dr. William Hunter, physician to St. George's Hospital ("Oral Sepsis as a Cause of Septic Gastritis, Toxic Neuritis, and Other Septic Conditions," Cassell & Co., 1901), and I shall draw upon it for some of the statements which I shall make in the course of this paper.

Dr. Herschell, one of the leading specialists in London upon disease of the digestive organs, has for some years also been conducting a very elaborate investigation of the relation of pyorrhea alveolaris to affections of the stomach and heart. His work is not yet published, as his investigations are still incomplete, but he has kindly furnished me in advance with some of his results and accorded me permission to use them in the preparation of this paper. In the first edition of his book on Indigestion, published in 1894, he drew attention to pyorrhea as a cause of certain gastric troubles, and since that time has examined some hundred cases of functional disturbances of the heart and stomach with especial reference to the condition of the gums and teeth.

As regards the production and appearance of pyorrhea, it is for my present purposes unnecessary to go into a detailed description, as these are generally well understood. I will therefore merely state a few propositions which I think are incapable of refutation.

1. The pus from diseased bone is the worst and most virulent kind of pus, as used to be well illustrated by the fearful cases of pyemia met with in operations upon necrosed bones before the advent of aseptic surgery.

2. Therefore the pus from and in connection with diseased teeth may be expected to possess the same characteristics. Teeth are not true bones, but their roots have a distinctly bony covering which, with the alveolar walls surrounding them, will, when in a state of decay and slow decomposition, produce septic conditions such as are found in wounds in any part of the body where pieces of bone are decayed or necrosed.

3. The gastric juice is capable of destroying a certain proportion of the disease germs introduced into it, but not all.

4. During a large proportion of the twenty-four hours a healthy stomach contains no gastric juice.

5. The resistance of the human body to toxins introduced from without varies in different individuals, and *ceteris paribus* will be diminished by poor general health, defective hygiene, or exhaustion of mind or body. We can thus easily understand how disease germs introduced into the stomach will sometimes set up toxic symptoms and sometimes be tolerated by the individual.

According to Hunter (*op. cit.*, p. 5), the most important organisms met with in the septic mouth are the *Bacillus gangrænae pulpæ*, the *Staphylococcus pyogenes aureus*, *Streptococcus pyogenes*, *Staphylococcus pyogenes albus*, *Bacillus pyocyaneus*, and the *Staphylococcus pyogenes citreus*. The numerous organisms enumerated by Miller, Fitzgerald, and others appear to possess little practical significance.

The injurious effects of the constant swallowing of pus may be enumerated as follows:

(A.) The effect upon the food in the stomach, producing abnormal fermentation, and the local effects upon the walls of the stomach.

(B.) The systemic effects produced by the absorption of toxins in the system.

(A.) LOCAL EFFECTS UPON THE STOMACH.

The following are six typical cases selected from Dr. Herschell's clinic and communicated by him for insertion in this paper:

*Case 1. Gastric neurasthenia, hyperesthesia of gastric nerves, hyperchlorhydria.* Louisa F., aged thirty, seamstress, attended the hospital on June 3, 1896. Her present illness commenced twelve months previously, and her chief complaints were of epigastric pain a few minutes after taking food, with a great aggravation about two hours later. This later pain was very severe, and often caused her to roll upon the floor in agony. She described it as cramps. It was relieved by taking food, especially milk. She was also troubled with constipation and palpitation of the heart.

Upon making a physical examination of the stomach, splash (*clapotage*) could be obtained two inches below the level of the umbilicus. As the pain happened to be present at the time of examination, a dose of eight grams of sodium bicarbonate was given, with the result of immediately relieving it. On the examination of the stomach contents three hours after a test meal, consisting of meat, bread, and water, the total acidity was found to be 100, free HCl 86, with marked presence of erythrodextrin. There could therefore be no doubt of the presence of hyperchlorhydria, the pain immediately after taking food being probably due to gastric hyperesthesia. On examination the mouth was found to be in a bad condition; pyorrhea was seen to exist, the discharge of pus being very profuse. Treatment was conducted upon ordinary lines until July 2d, without any marked benefit, when she was sent to the dental hospital to have the mouth treated.

When this had been done, treatment of the gastric neurasthenia was resumed, with the happiest results, the patient being practically well at the end of August, with a total acidity of 40 and only the normal amount of free HCl.

*Case 2. Myasthenia, or muscular atony of the stomach.* The patient, Annie H., a nurse, aged forty-one, presented herself on September 20, 1889. She complained of weakness and palpitation of the heart, vertigo on movement, and had been steadily getting thinner for some time. During the digestive period she was troubled with considerable flatulence. Upon examination the stomach was found to extend two inches below the umbilicus, and contained food residues from the day before. By the water test it was demonstrated that this retention was due to myasthenia, and not to pyloric obstruction. A Turck's capsule demonstrated the absence of any free acid in the stomach. The mouth was filled with black and decaying stumps, and was in a fearfully septic condition. The mouth was treated, and the patient given a simple mixture containing iron and strychnin. By November 28 she



was practically well. The gastric splashing was, of course, still to be obtained, although not through the whole of the digestive period, but the patient had a good appetite and was putting on flesh.

*Case 3. Gastric myasthenia of the third degree, with retention of food residues.* Catharine C., aged thirty, married, came under observation on November 3, 1899. She had been weakly for some years, and had suffered from frequent attacks of syncope. Had a severe confinement six years ago. Takes a good deal of weak tea, bread, and potatoes. Complains now chiefly of flatulence, which keeps her awake during the early part of the night. Gastric splashing was to be obtained below the umbilicus, and from an examination of the material—vomited before breakfast—which the patient brought with her, it appeared that the stomach contained food residues of the day before. A microscopic examination of the vomit also showed the Oppler-Boas bacillus and sarcinæ. There was profuse pyorrhea. By appropriate treatment the case was brought back to the stagnation stage, and no food residues were to be obtained before breakfast.

*Case 4. Neurasthenia.* Florence C., aged twenty-four, music mistress, came under observation on May 10, 1897. She complained of emaciation, nervousness, tenderness of the scalp, weakness of the back, claustrophobia, and other morbid fears. Was afraid to go out alone. She had been rapidly losing flesh for the previous year. Is very soon tired by either bodily or mental exertion, and quite incapable of any sustained effort. With the exception of anemia to the extent of sixty-five per cent. of hemoglobin, physical examination revealed nothing abnormal. The gums were very unhealthy, and there were several foul and decomposing stumps. The patient was at that time under the care of a dentist, who told her that the condition of her teeth and gums depended upon her general health, and that he could do nothing for her.

As treatment directed to her neurasthenic condition had effected no improvement by August 23d, she was sent to the Dental Hospital, where her mouth was placed in a healthy condition. From this moment improvement was rapid, and recovery was eventually complete.

*Case 5. Neuritis.* Gertrude F., aged twenty-five, dressmaker. This was a typical case of neuritis commencing in the nerves of the legs. There was numbness, tingling, and tenderness along the course of the anterior tibials, with marked weakness of the muscles. On walking, she dragged her feet to a slight extent. Pyorrhea and stumps. Recovery in six weeks on treatment directed to the mouth. I may add that she had been treated for some weeks at St. Bartholomew's with electricity and arsenic without effect.

*Case 6. Pseudo-angina.* James J., aged thirty-one, book-maker, attended upon February 15, 1897, complaining of attacks of severe pain in the cardiac region which ran down his left arm as far as the elbow. Nothing abnormal could be made out in the heart, and the other organs of the body were also apparently healthy. He had not indulged to excess in either tobacco or

alcohol. Bad pyorrhea and suppurating stump in the mouth. On the restoration of the mouth to a healthy condition, the patient recovered without any special treatment except an ordinary tonic.

On perusing the cases recorded by Dr. Hunter, in his book, it is unfortunately evident that these have not been studied from the most modern standpoint of gastro-enterology, and consequently do not teach as much as they otherwise might. Nothing, for instance, is said as to the time relations of the symptoms to meals, and apparently the stomachs have not been examined either as to their muscular tone or as to the condition of their secretions. Nothing is mentioned as to gastric splashing, nor the condition of the stomach contents after a test meal. We can therefore only guess as to their precise nature.

Case 1: "The patient suffered from severe intermittent sickness and gastric pain of eight months' duration, with loss of weight and increasing weakness."

Case 2: "An old gentleman. . . . He came complaining of sickness and nausea, with disturbance of digestion and a foul taste in his mouth."

Case 3: "Chronic indigestion, gastric pain, gastric catarrh. Pain two or three hours after taking food, with peculiar sinking feeling only relieved by eating."

Case 5: "Gastric discomfort, gastric catarrh."

In all these cases there was pyorrhea, upon the cure of which the gastric symptoms subsided.

From the study of these cases, it is apparent that they were probably chronic gastritis.

Within the last few weeks a typical case of gastric neurasthenia has been under my own observation. Miss M., a young lady twenty-four years of age, has suffered for the last two years from indigestion, which was diagnosed by her physician as gastric neurasthenia. Her symptoms were anorexia, and usually nausea after swallowing one or two mouthfuls of food. Pain, fullness, and flatulence during the digestive period, with occasional vomiting. Her medical adviser had made a physical examination, and gastric splashing, or clapotage, was obtained during the whole of the interval between meals. There was no retention or stagnation of food, and no food residues in the stomach before breakfast. The gastric juice was apparently normal in composition. The patient had been getting thinner for some time.

On examining the mouth, there were seen several necrotic stumps, partly overgrown with hypertrophied and extremely sensitive gum, and typical bad pyorrhea, pus exuding from the tumefied tissues around all the teeth upon the slightest pressure. The lower anterior teeth were quite loose, the odor resembling that of decayed cabbage. The breath was extremely offensive, and the tongue furred. The case was taken in hand *secundum artem*, and even before the termination of the treatment the symptoms subsided, appetite developed, pain, fullness, and nausea disappeared, and the patient began to put on flesh. I mention this odor of decayed cabbage, as it appears to be typical in chronic pyorrhea.

## (B.) SYSTEMIC EFFECTS FROM THE ABSORPTION OF TOXINS.

*Toxic Neuritis.*—This affection appears to be fairly common. Dr. Hunter records the following cases:

D. P., aged thirty-three, scene-shifter. Ill two and a half months, with wasting in both arms. Illness began with diarrhea and pains in the stomach, lasting about three weeks. About a month afterward noticed weakness in the hands, with feeling of stiffness, and the weakness extended up both arms. It was accompanied by a sensation of pins and needles. His mouth presented a condition of intense oral sepsis, dirty black teeth, many of them loose, and of extreme gingivitis.

This case improved in a marked manner when the mouth was put in an aseptic condition.

Mary G., aged thirty-three, confined three months ago. Complaint began with wasting, weakness, and numbness of muscles of left thumb and fourth and middle fingers. Pain up the arm to the left shoulder; great nervousness. Illness began with numbness in the fourth and fifth fingers, followed by pins and needles sensation. Some tenderness of left median nerve. Marked wasting of muscles of thenar and hypothenar eminences. Denture in upper jaw covering a number of teeth broken off; most intense gingivitis around roots.

After treatment declared herself wonderfully better; has lost her sallow look and is fresh complexioned; can now grasp freely with the left hand.

Besides these Dr. Hunter records several other similar cases, all of which were successfully treated when the oral sepsis was removed.

*Gout and gouty glycosuria.* Korner, in the first number of the *Deutsche Monatsschrift für Zahnheilkunde* for this year, in a paper entitled "Ueber Alveolarpyorrhoe und Diabetes," draws attention to the connection of the above affections with pyorrhea alveolaris. In his opinion, among the most important results of pyorrhea are the affections of metabolism, especially gout and diabetes. In the great majority of pyorrhea cases he finds sugar in the urine, and so much is this the case that he makes a careful examination of it in all cases where he finds the gums thus affected. He finds that pyorrhea is such a very early sign of a probable glycosuria that in many cases he has been enabled to make a diagnosis when the disease would not otherwise have been suspected.

As an apposite illustration of these facts, I may mention the case of a patient who was under the care of Dr. Herschell, and whose mouth was subsequently treated by my colleague, Dr. Bradner-White. Mrs. W., a lady aged sixty, had been troubled for some years with subacute gout in the feet and ankles, and about the end of 1899 developed gouty eczema upon the legs, arms, and abdomen. She then came under the observation of Dr. Herschell, who discovered both sugar and albumin in the urine and a very bad pyorrhea. The discharge from the gums was so excessive that it literally soaked the pillow during the night, and necessitated the



use of several handkerchiefs during the day. The odor from the mouth was, moreover, so offensive that it was hardly possible to remain in the same room with her. Needless to say, her appetite was lost, and she had emaciated considerably during the past few months.

On an examination of the mouth a frightful condition of things was to be seen. A small gold plate carrying the two lower central incisors was immovably fixed in position by a gold clasp on either side. Over these the granulations from the gums had grown, and similar tongues of flesh were present between nearly all the lower teeth, in some cases overlapping the crowns. Her dentist, who had charge of the mouth, had particularly cautioned her not to remove this plate on any consideration, and it appears he had seen her frequently without noticing the pyorrhea. The treatment was entirely successful. To save time, the tips of the granulating gums were removed with scissors, the plate extracted, and removal of the deposits effected; a spraying with hydrozone and application of silver nitrate soon brought the gums to a healthy condition. It was subsequently found possible to draw the teeth in the lower jaw together in such a manner that artificial teeth were not required. As the result of the treatment, the eczema promptly subsided, the sugar disappeared, the appetite returned, and up to date the patient has had no return of her troubles.

*Chronic rheumatic arthritis.* Mr. McNamara, of Westminster Hospital, in the course of a discussion upon the relations of rheumatism, held by the Chelsea Medical Society in March of the present year at their annual clinical debate, made the following remarks (quoted from report in *British Medical Journal*, March 23, 1901): "He commented on the toxic origin of rheumatoid arthritis, and said it was evident that some of the chemical substances produced by specific micro-organisms led to rapid destruction of tissue, as witnessed in pyemia. . . . He quoted a case in which a woman of twenty-five suffered from typically deformed and fixed joints, attributed to the absorption of septic matter from the sockets of teeth affected with dental caries." This case, evidently from the description a typical one of pyorrhea alveolaris, was successfully treated after the mouth had been put into a condition of health, although all previous treatment had been in vain.

A vicious circle may frequently be established where pyorrhea upsets general nutrition and lowers the resisting power of the gums to the external agents acting upon them, thus aggravating the disease, which in turn keeps up the gastric disturbances and produces nervous trouble by absorption of toxin from the pus continually swallowed.

**DIAGNOSIS.**—According to Dr. Hunter, the majority of the sufferers from chronic oral sepsis have a dirty, ashy-gray look, and suffer from general languor, irritability, and feelings of intense depression. When, in addition to these, we find a gastritis or neuritis, or a gouty rash, and, moreover, on examining the mouth find the well-known signs of pyorrhea or septic stumps, we shall be justified in coming to the conclusion that the general con-

stitutional condition may very possibly be the result of the local condition.

We now come to the most important part of my subject.

TREATMENT.—How shall we best cure the cases of pyorrhea alveolaris which come under our hands? I think that we are all agreed as to the first stage of treatment,—the removal of all deposits from the teeth, both above and below the edges of the gums. This must be done thoroughly, as the smallest little spicule of calculus left behind will keep up the irritation. We must not therefore grudge the time which it is necessary to expend, and our patients must also be educated up to the point of not grudging us fair remuneration for our work. Many sittings are often required to complete the work, and patience is necessary, both on the part of the dentist and the patient.

It is in the subsequent treatment of the pus-pockets that differences of treatment arise. One could fill many lines of print with a bare enumeration of the different drugs and chemicals which have been applied to the long-suffering patient,—trichloracetic acid, sulfuric, nitric acids, copper sulfate, hydrogen peroxid, carbolic acid, quinin sulfate, etc., to say nothing of cupric electrolysis and the actual cautery, all of which have their advocates. Without discussing the respective merits of these, I shall confine myself to briefly indicating the method which I have adopted in my own practice, and which I have found to give me the best results.

First remove all the deposit which it is possible to get away with instruments, and then with a flattened, fine point of soft wood rub the necks and down on the roots with aromatic sulfuric acid, to be followed immediately with sodium bicarbonate. This process leaves the pockets absolutely clean and the roots smooth. All will agree that the perfect removal of all irritating bodies is a *sine quâ non* for further treatment.

For the treatment of the diseased conditions of the gums, I rely upon preparations of silver, which are without doubt the most efficient germicides for our purpose, and at the same time have a most happy effect in stimulating the gums to a healthy action and in hardening them by its powerful astringent properties.

I use the nitrate in the form of a saturated solution carried on a bit of absorbent cotton, or the pure crystals melted on to the point of a platinum broach, and I use argentamin. This latter drug, prepared by Schering, is a solution of silver nitrate in ethylendiamin. It is a powerful antiseptic and germicide, and has the great advantages over silver nitrate that it is alkaline in reaction, it does not precipitate chlorids or albuminoids, and it penetrates deeply into the tissues. It is thus an ideal agent for the treatment of pus-pockets. It is best to begin with a weak solution, say ten per cent., and subsequently to double this strength. I apply it to the interior of the pockets with a tiny piece of absorbent cotton wrapped round a fine silver probe. The result of this treatment is often almost miraculous. In a very few days the whole appearance of the mouth is altered, and the discharge ceases; the gums become firm and contract tightly around the teeth, and an applica-

tion at intervals for the next few months will in most cases practically cure this usually obstinate affection. As a subsequent mouth-wash or dentifrice, to be used with a brush, I have obtained the best results from preparations containing salicylic acid and ratany, to be twice used daily. These two drugs seem to possess peculiar properties in maintaining the gums in a healthy condition and the mouth in an aseptic state.

## A STUDY OF COMPARATIVE OCCLUSION AND ITS BEARINGS UPON ORTHODONTIA.

BY ALTON HOWARD THOMPSON, D.D.S., TOPEKA, KAN.

(Read before the Society of Orthodontists, at St. Louis, Mo., June 12, 1901.)

THE force with which the lower jaw, or mandible, is closed against the upper jaw, or maxillaries, is probably unsurpassed in any department of animal mechanics. The principles of construction and of motion of the specialized parts devoted to food-reduction, and the precision and power with which this function is performed in the majority of animals possessing vertical mandibular occlusion of the jaw, is wonderfully illustrative of the capacity of the animal mechanism for the display of power. The limited amount of tissue of which the apparatus is composed does not appear capable of the degree of force exhibited by it. This force has been tested and measured by various means, but we are yet without a satisfactory method of estimating the real amount of power displayed by the human jaws, to say nothing of that of the lower animals, of which we cannot make even a conjecture. Some recent experiments in regard to the crushing power of the human jaw are practically devoid of results. We are still in want of a reliable system, and even of a rational theory, that would enable us to measure the power of the jaws of animals.

In a recent excellent article in the *International Dental Journal* by Mr. F. M. Thomas, an electrical engineer, the writer says, "There seems to be some confusion of terms in the discussion of the forces used in mastication. The words 'force,' 'power,' 'work' are frequently used synonymously, but it is well to remember that *force* is that which produces a change in the motion of a mass or body; *work* is done when a force produces a displacement of a mass, and *power* is the rate of doing work. It is known that a force that may be applied directly upon the object to be moved (without the intervention of a lever system) produces a stress equal to the force. It is also known that a force producing motion does work, and that work is represented by the product of force and the distance through which it is exerted." He then applies these laws to the study of the power of mastication, and concludes that "we may assume that the total pressure is one hundred pounds to be exerted at one point," and by further figuring calculates that "the power expressed by the jaw is about one one-hundredth of a horse-power."



Still, we think that his calculations are below what the estimate should be, even considering the distribution of force over the whole jaw area. This rarely occurs, but the force is usually concentrated at one point, where the food rests, and the bolus receives the entire impact. Through the food, the force of occlusion is distributed over the supporting environments of the teeth and acts kinetically upon their structure and form.

It is most apparent and conclusive that the occlusal force is that influence which controls and modifies the evolution of the muscles and bones as well as of the teeth themselves. As Dr. Jno. Ryder says (in his classic article upon "The Mechanical Genesis of Tooth-Forms"\*) , "*The necessary actions of an animal modify most profoundly the forms even of the very hardest of tissues.*" This may be taken as a fundamental truth upon which all evolutionists are agreed, and which requires no defense. He says further, "The mandibular or masticatory apparatus of animals may be regarded as a lever of the third class, in which the glenoid cavity is the fulcrum, the muscular force exerted by the masticatory muscles the power, and the resistance of the food to the teeth in crushing the weight. Since the coefficient of muscular force is 104 pounds to the square inch of transverse section, it is easy to surmise what would be the tendency of the exertion of the force of the many square inches in section of the masticatory muscles upon the jaws and teeth in mastication. It would manifestly not be consumed in the mere comminution of food, but it must also react upon the structures which were directly subjected to the resulting strain,—viz, the teeth."

This force acts coincidentally upon the supporting structures of the teeth,—i.e., the bones, muscles, etc. This is illustrated in many animals,—as in the carnivora, for instance, where the jaws are short and stout, with heavy muscles attached well forward upon the body of the mandible for the exertion of great direct closing force; or in the long, light jaw-bones of the herbivora, where strong vertical force is dispensed with and extreme lateral movement reigns instead. As Lamarck said a century ago in his famous *third law*, "The development of organs and their force of action are constantly in ratio to the employment of those organs." The teeth were produced for the purpose of performing a function, and that function is the reduction of food to prepare it for digestion. Not only were the teeth evolved for this purpose primarily, but by the variations presented by different kinds of food which animals came to employ various types have been evolved, and the jaws also have been greatly modified. This adaptive modification has led to the almost endless variety of teeth and masticating apparatus found throughout the animal kingdom, all of which are admirably adapted to the reduction of the different kinds of food ingested. The teeth being merely the armament of the jaws, it follows that they were developed collaterally with them and under the same laws. Thus the modification of the forms of the teeth and of their supporting environments is directly due to the force of occlusion and of jaw

---

\*Proc. Phila. Acad. Nat. Sci., 1878, p. 45.

movement. The dental tissues, like all other parts, are physiologically disposed to modification and development in the direction of the greatest strain. This is what Dr. Jno. Ryder calls "displacement due to strain," and he states that "many of the parts concerned in the function of mastication were greatly modified and brought to their present shape by the mechanical resistance incident to its performance."

Following the occlusal force, the next greatest influence in modifying the masticating apparatus is jaw movement. As Dr. Ryder further says, "Zoologists seem to have paid little or no regard"—up to the time of his observations—"to the mandibular movements of animals as the proximate causes of tooth-modification. . . . I observed that there were several distinct kinds of mandibular movement, each kind corresponding to some very distinct type of tooth. . . . The varieties of mandibular movement observed are diagrammatically shown in Fig. 1. The end of the mandible in

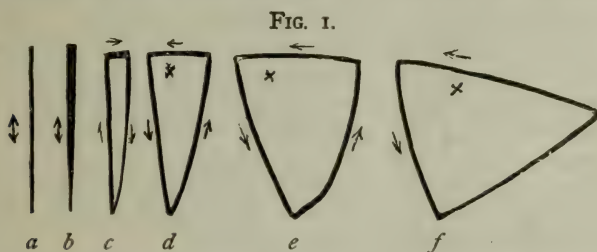


Fig. 1. DIAGRAM OF THE MOVEMENTS OF THE JAWS. *a.* The carnivora. *b.* Some omnivorous animals. *c.* Tapirs, kangaroos, etc. *d.* Some fossil forms. *e.* Some ruminants (as *Cervus*) and the rhinoceros, etc. *f.* Camel, giraffe, ox, and other ruminants.

the carnivora was found to describe the figure *a*. . . . In the feline section of the carnivora no other kind of movement would be possible," since the condyloid articulation of the jaw is a close hinge,—it does not allow of any lateral movement whatever. "The movement which produces *a* is that made in simply opening and closing the mouth. . . . The figure *b*, showing slight lateral movement, is that of some of the pigs," and perhaps of others which are just departing from the vertical mandibular movement. "That at *c* is the figure described by tip of the mandible of the tapirs," being an advance in lateral movement on that at *b*. "It is also typical of the kangaroos and phalangiers," and a theoretical form is shown at *d*, to fill the gap between *c* and *e*, "which was probably that of some fossil forms. That at *e* is the figure observed in many species of both ruminant and non-ruminant animals. Several of the *Cervidae* (or deer tribe) and the rhinoceros were observed to describe this kind of figure, and from its prevalence among ruminants I suspect that it is the commonest form. The figure at *f* is that described by the camel, giraffe, ox, etc., in which the extreme in respect to the degree of lateral movement of the jaw is reached. . . . In the elephant and in some rodents, as the beaver, the motion of the jaw is from behind forward, and has relation to the cross crests of the molars," which are arranged to resist this kind of movement.

"Displacement due to strain" is one of the cardinal principles of Dr. Ryder's doctrine of the mechanical genesis of tooth-forms. He says, "The evidence is met with all through the herbivora." In *Cervus* the molars have been moved outward above, "as though the displacing force had acted equally upon the anterior and posterior portion of the inner side of the upper molars. This displacement is the greatest in the later forms, most anisognathous (or having dissimilar upper and lower molars), and with the greatest lateral excursion of the mandible. In the lower molars no such displacement occurs as noticed in the uppers; the reason seems to be that the lower teeth being confined as they are to the ramus, no such displacement can take place." It might also be suggested that the strong, active, fleshy tongue controls the position of the lower teeth to a degree, and prevents their inward movement by its strong pressure. "The force of the mandible always acting to push the upper teeth outward, since they always come first into contact upon the inner borders of the crowns of the upper molars and the outer of the lower ones, would also react powerfully, during mastication, upon the lower molars, tending to push them inward and approximate the series of the opposite sides. The molar series of the mandible of the giraffe are, as a whole, slightly convex internally,—the reverse of the upper series, which is convex externally. The reversal of this convexity is in keeping with every other character. The displacement seems to be greatest where the masticatory muscles can act with the greatest force, and that is nearest the articulation of the mandible with the skull."

Extensive lateral as well as antero-posterior movement of the mandible over the foldings of the cross crests of the molars causes the well-known complicated pleatings of the enamel patterns of the herbivora. The molars of the *Cervidae* (deer tribe), for example, have "deep transverse valleys and cross crests, where the movement is entirely lateral." In most of the herbivora the enamel foldings follow the movements of the jaw. "The changes are to be regarded as arising in a large measure from the strain incident to mastication,—as the contact of the upper and lower teeth of *Lepus* (hare) always takes place first upon the outer portion of the crown of the lower molar and the inner portion of the crown of the upper molar; and after contact the movement of the jaw is from within outward, causing the upper molars to be pressed outward and the lower inward, mutually causing the upper series to recede from each other and the lower series to approach each other,—probably carrying the rami along in the changes. Nor does the change stop here: the molars are apparently curved outward above and inward below from the same cause. . . . The enamel foldings show that the same kinds of strain were operative here as elsewhere."

Prof. E. D. Cope says:\*

"In the wide excursion of the jaw, as seen in the giraffe, ox, camel, etc. (Fig. 1, *f*), it is moved transversely from one side to the other. Some masticate on one side of the jaw when performing this movement, and some on the other. That is, in passing the

---

\*"Primary Factors of Organic Evolution," p. 320.



lower jaw across the face of the upper some masticate the food on the side where the lower jaw passes the external edge of the upper jaw from without inward ('ental'). While masticating with one side, the opposing dental series of the other side are not in contact. All mutual effect of the teeth of one jaw on the other would therefore appear on the side temporarily used for mastication only. Among recent ungulate, the ruminants present the ental mastication and rodents the 'proal' or flat.

"When the crests of the inferior molars were developed, their relation to the crests of the superior molars was always anterior in mastication. That is, the inferior crest in closing the jaw collides with the crest of the upper molar with its posterior edge against the anterior edge of the latter. . . . In those forms which masticate from the inside outward (the ental type) the cusps of the inferior molars passing between those of the upper molars would tend to flatten the side on which they exerted friction and to extend those sides outward. The result would be, taking into view the yielding of the tissue to such a strain, to modify the shape of the cusp by pushing out its side walls and making it more and more crescentic. The effect on the inferior teeth would be to produce the same effect on their external cusps, but in the opposite direction. . . .

"Another example of the effect of strain is shown by the direction of the inferior incisors of the lemurine *quadrumana*. These teeth project horizontally from the extremity of the mandible, so as not to oppose the superior incisors, in consequence of which they are useless as organs of prehension. But they are used by their possessors as a comb for the fur, drawing them from below upward when thus employing them. The strain is always in one direction, and must have resulted in developing the procumbent position. This is a direct deduction from the fact that the incisor teeth are similarly displaced by the pressure of the tongue in cases of the abnormal development of this organ in man."

In man the dental apparatus is, of course, greatly reduced from that of many lower animals, and it is capable of very much less force. A scientific statement of the differences between the dental apparatus of man and lower animals expressed in approximately correct values would be of great service in estimating the occlusal force of each,—but that we do not yet possess. All we do know is that the occlusal force in man is considerable for so small an area, and also that it is sufficient to modify the supporting environments of the teeth. We have seen how the teeth of lower animals have been extensively modified as to form, tissual structure, position, and supporting environments by the powerful effects of the occlusal forces and the direction of jaw movements. In the higher forms this is also manifest, but in a different degree. From the selenodont (or folded) molars of the herbivora to the bunodont (or tubercular) molars of the carnivora and omnivora is a long step, the differences of jaw movement being shown in Fig. 1. The vertical motion of the jaw in the carnivora is followed by the vertical development of the teeth, and as the motion becomes lateral the

teeth are developed laterally. In man there is both proal and ental excursion of the jaw and direct occlusion. The tubercles are rounded, but not folded. Direct impact is intended, with but little lateral movement, for the human jaw has but a very limited field of excursion. Hence, like other omnivorous animals, man has the rounded tubercles adapted to these limited movements.

The force of occlusion in man, although much less than that of the quadrumana and carnivora below him, is still sufficient to modify the position of the teeth and the form of the jaw. Hence the teeth are developed in accordance with the occlusion, and take their places to meet the demands of use and arrange themselves according to a preordained evolutionary plan. As the occlusal force acts upon them, the supporting environments are evolved to give the teeth stability and permanence. In the growing jaws of the child we observe the beautiful adaptability of the teeth to the occlusion and the corresponding accommodation of the supporting environments,—*i.e.*, when this evolution proceeds in a normal manner. It is one of the most fascinating mysteries of nature as to how and why the developing teeth arrange themselves in the course of eruption as though directed by a controlling intelligence. Wonderful indeed are the powers of evolution as evidenced by its workings in nature!

But when the evolution of the teeth and jaws is disturbed and abnormal we have deformity and derangement, and we wonder at the laxity of nature and the suspension of her vigilance. The evolutionary potencies have failed in the performance of their duties in superintending and directing the development of the parts, and deformity and abnormality result. This collapse of the evolutionary powers is in many respects unaccountable. As to why these powers should fail at the critical period and the influences that dictate normal evolution be held in abeyance we are at a loss to understand. Of course, it can be accounted for to some extent by the workings of the well-known laws of evolution. Among the most potent of these are the inherited effects of disuse. The lack of use in the parent is undoubtedly transmitted to the child as a deficient growth-stimulus, and appears in the defective development of the parts which have not been employed, and accrues from generation to generation. This is a fundamental law of evolution. The lack of development of the masticating apparatus in a child can to an extent be laid to the disuse of these parts by the loss of the transmitted effects of normal occlusion. Then the child also, because of the imperfection and inefficiency of the parts, fails to develop any occlusive power at all, and the erupting teeth accordingly fail of a proper arrangement in the jaws. In other words, *the occlusive force must be exercised to attain the proper development of the parts.* Failing in the occlusive force, normal development fails. That is a logical conclusion. We have observed how the powerful occlusion of the jaws of lower animals has such a wonderful effect upon the teeth, both as to tissual arrangement and as to position. The crest of an herbivorous molar through continuous impact for many generations acquires a permanent curve and



infolding. This is because the occlusive force is powerful and is sustained. In man we find that the occlusive force is weakening and is unsustained, and in consequence we have a weakening of the parts and defective development through the transmitted effects of disuse, which comes about through the well-known law of economy of growth. Nature is niggardly of her expenditures, and wastes no materials upon parts which are apparently useless. As soon as a part ceases to be employed, and employed actively and usefully, she sets about its reduction by the workings of the natural principles of the economy of growth.

Another law contributing to the reduction of the parts is that of correlated growth. We observe, in the course of the evolution of animal life from the lowest to the highest forms, that as the brain increases in size the jaws diminish. In the higher quadrumana this is apparent, and then taking the long step over the unfilled chasm separating man from the higher apes we find a great change in this respect,—the brain has become greatly enlarged, and the jaws are correspondingly greatly reduced. This is largely due to the compensation of growth,—the enlarged brain led to a greater intelligence by which the teeth were less and less used for tools and weapons. This is what Cope calls “degeneracy from disuse and complementary excess elsewhere.” Or, again, he says that in man “the orthognathism of the higher human races is accompanied by full frontal development; the two modifications constitute a retardation of the post-embryonic growth of the face. But this change can be traced to use,—increased brain action enlarging that organ and expanding its osseous case, probably at the expense of the lime-salts which would otherwise go to the jaws. Reduction of the teeth in man cannot be regarded as a useful character in itself, but it is complementary to the development of other characters which are useful.” In the higher races this law of the correlated variation between the jaws and brain is most abnormally active. Excessive brain development and intellectual activity is apparently having a disastrous effect upon the development of the jaws and the unlearning of the habit of powerful occlusion.

Malocclusion of the teeth, during and after eruption, is also an important and potential factor in the derangement of perfect alignment. Contraction of the jaws may give rise to abnormal eruption, and thus, occluding with the opposing teeth, serve to further distort the tooth that is out of place. In the movement incident to lateral occlusion in the herbivora we have observed how the position of the molars has been altered. In malocclusion of the teeth of man this lateral occlusion tends, by one of the most powerful of mechanical devices,—the inclined plane,—to displace the derelict tooth still further. This lateral displacement by malocclusion is one of the most powerful influences in aggravating malocclusion when once, for any reason, a tooth has departed from the supporting control of the arch and of normal occlusion. This lateral displacement also destroys symmetry of the arch and of the jaws, and leads to many varieties of deformity of the face. Strong



normal occlusion, by preserving the arch and the density of the jaws, gives strength and symmetry to the face as well. Direct impact by normal occlusion tends most directly to the development of the supporting environments,—according to the well-known laws of the effects of use,—which is lost by malocclusion. The effects of disuse are at once apparent in all forms of malocclusion and mal-development of the bones of the jaws. Irregular teeth being inefficient and inconvenient for the purposes of mastication, this necessary function is gradually neglected, and falls into abeyance; the food is never properly masticated, and the parts remain undeveloped and embryonic to a degree. For this reason patients, after the correcting of an irregular condition and the restoration of normal occlusion, should be instructed to masticate the food thoroughly and hard, to the end of inducing a redevelopment and a hardening and strengthening of the parts. Not having been accustomed to the performance of normal and hard mastication, much voluntary effort will be required to establish the habit, but it is absolutely essential that it should be performed.

---

## CONTINUED ANESTHESIA WITH NITROUS OXID, UNDER DEFINITE PRESSURE.

BY W. A. HECKARD, D.D.S., INDIANAPOLIS, IND.

(Read at the Tri-state meeting at Indianapolis, June 4, 1901.)

**I**N breathing the atmosphere, which is about four-fifths nitrogen and one-fifth oxygen, no discomfort is experienced. As a definite amount of oxygen is necessary to health, anything that interferes with or restrains the breathing capacity, as an inhaler over the face, pneumonia, asthma, hay fever, or other cause, renders it necessary that to maintain comfort and sustain life the amount of oxygen be increased in proportion to the impediment.

Pure nitrous oxid, when inhaled without oxygen or air, first produces sleep. Continued, it causes anesthesia, and finally asphyxia. At this last stage it becomes dangerous. While there are some who deny that asphyxia is at last produced, the fact that oxygen will prevent the occurrence of the symptoms would seem to prove that the condition is properly called asphyxia. By mixing a small percentage of oxygen with the nitrous oxid, cyanosis, jerky and irregular breathing, deep stertor, and movements of the muscular system are eliminated. The addition of oxygen or air renders nitrous oxid anesthesia agreeable to children, anemics, debilitated persons, patients with enlarged tonsils and lung affections, those advanced in years, and those who claim to have always heretofore had unpleasant sensations from the use of nitrous oxid alone.

In my earlier experiments with oxygen I ran a tube from a large cylinder containing two hundred and fifty gallons into my inhaler, giving the oxygen by mouth through the tube, with gas by the ordinary inhaler. And with nitrous oxid and air my assistant held a nitrous oxid tube with one hand and compressed the nostrils of

the patient with the other, thus depriving me of her aid in the operation. These and other devices gave fairly good results, but were all unhandy and indefinite; so for several years I ceased to experiment along this line. During the past year I have taken the matter up again, and this paper is intended to give you the results obtained.

Dr. Hewitt, of England, first suggested an inhaler that would permit of oxygen being administered with nitrous oxid. The S. S. White Dental Manufacturing Company has constructed an apparatus to attain the same result, and for those who have not seen it I will state that I will have mine, slightly changed, on exhibition in the clinic hall. This apparatus is perfect as far as it goes, but it does not go far enough. The objection to it lies in the fact that as soon as the face-piece is removed the patient begins to recover, the period of anesthesia being only from half a minute to a minute and a half. But with the apparatus I will describe anesthesia may be continued indefinitely.

So far as my knowledge extends, the devices that have been used for maintaining anesthesia for prolonged operations have not been perfectly adapted to producing the desired result. The Hurd inhaler, one of these, incloses the nose. Flexible tubes through the nares to the posterior portion of the oral cavity have also been employed. All plans which depend upon the nares as an avenue for the introduction of gas are open to serious objections. A vast number of people are mouth-breathers, due to catarrhal affections, hay fever, hypertrophied turbinates, or nasal passages filled with polyps. During the fall, winter, and spring those who are subject to "bad colds in the head" are frequently unable to breathe through the nose. If the patient is unable to breathe through the nose with comfort, that avenue is not a favorable one for the introduction of an anesthetic; and also if the nasal passages are so nearly closed that breathing through them is difficult, they should not be further irritated by passing a tube through them. Furthermore, it is not infrequent for the nasal passages to close spasmodically by reflex action during anesthesia. Therefore the nose is not the ideal avenue for introducing gas.

And now a few words about the rubber and cloth bag commonly used as a receiver for the gas. Its action is exactly the reverse of what it should be. Patients are compelled to inspire to get the gas. This is frequently alarming to them, for they feel that the success of the occasion depends somewhat upon their exertion, when they should be entirely free from any responsibility in the matter and should really not be conscious that the administration of an anesthetic has been begun.

Furthermore, with the bag, the patient is likely to get the largest amount of gas during the first few inhalations, as at that time the bag is fullest and the gas easiest to get, owing to the greater pressure. Later, as the patient is becoming anesthetized and the administration of the gas should be pushed, it is really diminished because the bag is being emptied and the operator does not care to "waste gas" by putting more in the bag than will be used. This is abso-

lutely contrary to scientific practice. In giving general anesthetics the patient should be slowly brought under the influence by beginning with a small amount of the anesthetic and gradually increasing the quantity exhibited.

The all-rubber bag, covered by a netting, is only a slight improvement over the rubber and cloth bag. All bags used for this purpose are too small, or else so elastic that no definite pressure can be maintained. The cylinder key needs constant attention to keep the bag supplied. Furthermore, there are patients who demand such a volume of gas to anesthetize them that the cylinder valve will freeze up in trying to keep the bag supplied. This occurred a short time since during some experimental work with a small tank. The valve froze up so tightly that the gas stopped flowing; the valve could not be turned, and the patient could not be anesthetized.

My apparatus as at present constructed consists of a metallic tank, two gauges, a pressure-regulator, some nozzles, and a nose clamp. The tank or receiver is of fifteen gallons capacity. Small receivers do not afford an opportunity to secure an even supply of gas under a definite pressure. Without a definite pressure, capable of being regulated by the operator, sustained perfect anesthesia is impossible. Connected to the receiver by a yoke are two one-hundred-gallon cylinders of nitrous oxid liquid gas. By opening the cylinder valve, the gas in the cylinder will escape into the receiver. When a hundred-gallon cylinder of gas is allowed to flow into the receiver, the gauge will show a pressure of one hundred and twenty pounds to the square inch. This is now compressed gas instead of liquid gas.

The valve to the right of this gauge is to prevent the escape of gas from the receiver while changing an empty cylinder for a full one. To the right of where the gas enters the receiver is an outlet valve through which the gas passes to the patient. To the right of this is a pressure-regulator, and farther to the right is another gauge.

By turning the thumb-screw of the pressure-regulator to the right or left, the pressure at which the gas leaves the receiver will be diminished or increased, and the change shown by the gauge to the right. This gauge runs from one-quarter of a pound to ten pounds. The latter is a heavier pressure than can ever be used for this purpose. A pressure ranging from one-quarter of a pound to five pounds will be found sufficient for most cases. Without this pressure-regulator and gauge the gas would first leave the receiver under one hundred and twenty pounds pressure, gradually diminishing to zero as the receiver emptied itself, so that on this pressure-regulator and gauge depend the definiteness of the method.

Anesthetization is begun with a low pressure, which is gradually increased as the patient passes under the influence of the gas. When the patient is sufficiently anesthetized, the regulator may remain set at any pressure necessary to maintain any desired stage of anesthesia for an indefinite period, leaving the operator with both hands free to work and the patient with the mouth open. It is often desirable during some operations to have the patient but partially



anesthetized, and this can be satisfactorily accomplished by a turn up or down of the regulator, which increases or diminishes the volume of gas.

In this connection I may state that the rapid expansion of the gas as it flows from the cylinder into the receiver renders the gas very cold, but if the receiver be filled some time before the operation the compressed gas will be warmed to the temperature of the room. This is a decided advantage over injecting cold gas into the nose and throat. The administration of cold gas will sometimes cause inflammation of the mucous membrane lining the respiratory tract, and it is possible that it might set up a train of symptoms leading to pneumonia. Warm gas acts more quickly than cold gas, and less of it is needed to produce anesthesia.

Mention has been made of some of the objections to the nose as an avenue for the introduction of gas, and attention has been called to the desirability of mixing oxygen or atmosphere with the nitrous oxid. The objection is met by using the mouth as an avenue for introduction, this method also insuring the mixture of atmosphere with the anesthetic.

Having experimented with several styles of nozzles with which to spray the gas into the mouth, I have found that the most convenient are the ones in which the nozzle and mouth-prop are combined. They are all so constructed that they can be taken apart and sterilized. When extracting is to be done, the hook nozzle will be found to fit any case, while for operating on sensitive dentin or for removing live pulps the rubber prop and nozzle combination is the best. It can be fitted to any mouth, no matter how irregular the teeth, and even although some teeth have been extracted.

The holes through which the gas passes are cut in such a manner that the gas is thrown out in a flat, flame-like spray, similar to the butterfly flame of an artificial gas burner. By blowing cigar smoke through the nozzle, the manner in which the gas is sprayed over the mouth is readily seen.

There is nothing especially new to learn in using this apparatus. The usual preliminary precautions are taken, and the patient fitted with the nozzle and prop best adapted for the work in hand. The receiver has been previously filled in order that the gas may assume the temperature of the room. The mouth is then thoroughly cleansed with borolyptol and distilled water, or something equally efficient, by means of a Davidson spray bottle and an air pressure of from thirty to forty pounds. The nozzle and nose clamp are then adjusted, and the administration of the gas begun with a pressure of about a quarter of a pound.

Hypnotic suggestion is always attempted, to divert the patient's attention from unpleasant thoughts. The sound of escaping gas is so slight at first, and is so gradually increased as the patient passes under the influence that it is seldom noticed. This is especially true in my practice, and will be so in all the offices where compressed air is freely used, as the patient becomes accustomed to the sound of escaping air while the mouth is being sprayed. If it is desired to decrease the amount of atmosphere being inhaled and

to hasten anesthesia, a rubber cloth, a napkin, or even the hand may be used to partially close the buccal orifice. The amount of atmosphere admitted will be regulated by the appearance and condition of the patient. This can readily be determined by experience.

Recently, in my office, a patient desired to have some cavities prepared. She had attempted it before without success, and she said she would "pay anything" if she could have the cavities excavated without pain. I told her it could probably be accomplished. She said she had inhaled chloroform out of a wide-necked bottle, and it always made her sick for days afterward because she was idiosyncratically opposed to it. She knew not why, but it always had an effect on her that she could not account for. I told her I would not use any chloroform, but that I thought I could prepare the cavities without pain. I sprayed her mouth with compressed air and the solution which I spoke about, and after spraying her mouth with it awhile she became used to the hissing noise and liked it. She liked the sensation produced by the antiseptic. She said, "There is a good deal of moisture in it." I said, "Yes, that is wet. Now I will give you some dry." I hooked the nozzle over her nose, she having given me permission to do anything I pleased, provided I did not use chloroform. I hooked that over her nose, and started giving her a little gas gradually. She thought it was a little more of the same thing (compressed air and borolyptol). I gave her the dry air with the gas, and she passed into a sleep. I excavated two cavities and took the pulp out of a second inferior bicuspid, dressed the canal, put a piece of cotton with sandarac varnish in cavity, and allowed her to awaken. After she awakened the first thing she said was, "What was I just going to say? It slipped my mind. I was going to say something to you, but it has somehow or other slipped my mind." I said, "You have been asleep," and she then realized that she had been asleep. I kept her asleep for about six minutes.

If the operation is the extraction of a single tooth, the gas may be shut off as soon as anesthesia is complete. If the operation is one that will require some time to complete, the desired stage of anesthesia is readily maintained by increasing or decreasing the supply of gas to meet the necessities of the occasion. Sensitive dentin may be excavated, live pulps extracted, the alveolar process trephined, or other operations performed with perfect satisfaction to both patient and operator. Those who were here this morning saw that child operated on. It was no small chagrin to me that the doctor operated before I admitted that the child was anesthetized; that is, to the extent that you have to anesthetize a child. A child has to be anesthetized farther than anybody else. The operation was so small that it would not have hurt the child much even if no anesthetic had been given, because there is hardly any pain at all in removing an adenoid, and the child simply had a few adenoids to be removed. The man whose wife had the eye to be removed concluded that he did not want his wife to face the crowd. The doctor operated when the child was partially anesthetized, which was all right from his standpoint, but I wanted the child not to move. In

my office I would have done the same as he did, but I wished the anesthesia to go a little farther in order to show that under this treatment, when sufficiently applied, the patient does not struggle. The patient does not struggle or show distress, as is so frequently the case when the face-piece is used. There are no asphyxial symptoms, and recovery is prompt and complete, with no bad after-effects. Beyond all, the operator can do better work, since he is not hurried. He can pause and consider the best move to make next. He can be deliberate, even if he be not dexterous.

For more serious surgical operations, where it is desired to secure the profounder anesthetization of ether, the patient may be first brought under the influence of the gas and etherization be begun in connection with the exhibition of the gas. This method precludes the possibility of those disagreeable symptoms which usually prevail during the earlier stages of ether anesthetization. The many advantages of the method are so apparent that it seems like a waste of time to dwell on them. The nerve-racking features in the practice of operative dentistry and oral surgery are almost entirely eliminated for both operator and patient, resulting in better work and a saving of time and vitality to both.

Before closing I want to call your attention to another feature of the apparatus. By attaching one or two mouth blow-pipes to the receiver and to the illuminating gas by means of rubber tubing and a simple metal Y connection, a perfect oxyhydrogen blow-pipe is secured. By having nozzles with different-sized openings, small or large flames may be used. This apparatus has all the advantages of the Knapp blow-pipe, and the additional ones that a large or small flame may be obtained by changing the size of the nozzle tips; and that the operator may know how much nitrous oxid he has on hand for his operation, thus avoiding the annoyance of exhausting the cylinder of gas with a case half soldered. The gas pressure is also absolutely and definitely under control.

Before closing I want to call attention to another feature of this apparatus. By attaching one or two ordinary blow-pipes to this tube with an ordinary Y connection, a complete oxyhydrogen blow-pipe is produced with illuminating gas in the usual way. I intended to have one of those blow-pipes here. You may put a tube in here and make as many blow-pipes as you please, or you can make a Bunsen burner, have an oxyhydrogen Bunsen burner with a very small flame, and it will not blow out. There is now a pressure of seventy-four pounds in this large cylinder. Now, by setting this regulator on the other side you can make the pressure just what you please. It is now set at seven pounds, and it will stay at seven pounds on this side just as long as there is as much as seven pounds pressure in the large cylinder, and, as there are seventy-four pounds, it would run twenty or thirty minutes without changing. If the patient is thoroughly anesthetized now, he will remain just at that stage and no farther, because with nitrous oxid gas there is no second stage after the anesthesia is removed. The patient only goes as far asleep as the anesthetic carries him, and the minute the anesthetic is shut off he immediately begins to recover instead of sinking farther.



## A STATISTICAL STUDY OF LOCAL ANESTHESIA IN DENTISTRY.

BY MORRIS I. SCHAMBERG, D.D.S., M.D.

(Read before the Pennsylvania State Dental Society, July 9, 1901.)

EVERY innovation in medicine is met by more or less conservative opposition before it gains acceptance, and this attitude of conservatism is by no means to be deplored.

There is, however, at times an excessive tendency to hastily decry or to pass unfavorable judgment upon measures which may ultimately be potent for good. In view of the fact that local anesthesia in dentistry has been adversely criticized by many men of prominence as teachers in the profession, and in view of its use in spite of this fact by many competent practitioners, I have made the effort to obtain an expression of opinion which would represent the prevailing sentiment of the profession on the question. I therefore addressed a circular letter, a little over a year ago, to about three hundred practicing dentists in different sections of the United States, requesting replies to the following questions:

1. Do you employ local anesthesia in your practice?
2. Kindly state what drugs or combination of drugs you use for this purpose, and also your method of employing them.
3. Have you observed any untoward effects, either constitutional or local, from their use?
4. What means, if any, do you find necessary to prevent post-operative swelling and sloughing?
5. Remarks or reports of interesting cases.

Copies of this letter and these questions were published in a few of the dental journals, so that any one desiring to record his experience and opinion might respond. Unfortunately there were but few replies through that source, and most of these, to the number of twenty-six, were laudatory of certain advertised anesthetic mixtures. Inasmuch as these replies were forwarded at the instance of commercial houses, and with an evident intent to advertise their products, I have refrained from the publication of them in the report which I herewith present.\*

Only one hundred and thirty-two legitimate replies were received. One hundred and two members of the profession stated that they used local anesthetics in their practice. Of the remaining thirty replies, a few condemned the use of local anesthetics, whilst the rest merely stated that they did not use local anesthesia, inasmuch as they referred their dento-surgical cases to the specialist.

The replies show that cocain and eucain constitute the main ingredients of the injections used to benumb sensation in the mouth.

It may not be out of place to analyze the replies in reference to the preparations employed:

---

\*The voluminous character of the tables which accompanied this paper, showing in detail the individual experience of each respondent, precludes their publication in the DENTAL COSMOS, but they will appear with the paper in full in the volume of the society's Transactions.

Injections of aqueous solutions of cocain .....	23
“ “ cocain in combination with other drugs .....	21
“ “ aqueous solutions of eucain .....	20
“ “ Dr. Hoff's formula (Parke, Davis & Co.'s tablets) .....	12
Ethyl chlorid spray as refrigerant .....	12
Cocain as a local application.....	10
Injections of chloretone .....	4
“ “ Wilson's anesthetic .....	4
“ “ Schleich's solution (infiltration).....	3
“ “ Nirvanin .....	3
“ “ Alvatunder .....	3
“ “ Waite's anesthetic .....	2
“ “ Victor anesthetic .....	1
“ “ Eureka anesthetic .....	1
“ “ Antitortus anesthetic .....	1
“ “ hydrogen dioxid .....	1
“ “ alcohol, water, and salt .....	1

In some instances untoward phenomena were reported, but not one case of a fatal termination has been recorded. Some of the replies in regard to methods employed for the purpose of obviating these conditions are decidedly interesting and instructive. While calculation shows that about 77 per cent. of those who responded use local anesthetics and counsel their employment, it must be remarked that this percentage is in all probability somewhat in excess of what it would be if an accurate census of the profession on this subject could be obtained. Those interested in the use of local anesthetics are naturally more prone to answer an inquiry in reference to this subject than those who do not employ them.

Again, it may be maintained that the aggregate number of letters sent out in this investigation was too small to warrant any definite conclusions.

Admitting the justice of these criticisms, the fact still remains as a result of this inquiry that a large number of practicing dentists of good repute are employing with satisfaction local anesthetics in the mouth. This is rather surprising in view of the fact that in many of the prominent dental colleges of the country the students receive little or no instruction concerning local anesthetics, and are frequently admonished against their use.

Let us now consider the chief objections which have been urged against the use of local anesthetics in dentistry. They may be stated as follows:

1. *Unsatisfactory anesthesia.* It has been claimed by some practitioners that local anesthesia is unsatisfactory because of the incomplete loss of sensation produced. This result may be attributed to imperfect technique. It should be remembered that the administration of chloroform, ether, or nitrous oxid is as unsatisfactory as the use of cocain, eucain, or the ethyl chlorid spray in the hands of an inexperienced operator. Too small a quantity of the anesthetic will render the operation painful, whereas too much will endanger the patient's condition. How often, with as harmless an anesthetic as nitrous oxid, will the timid administrator proceed with the operation in hand before the patient is fully anesthetized? It may be justly claimed, then, that the poor results achieved by dentists with anesthetics, both general and local, are largely due to the fact that

many of the dental schools do not give this subject the consideration that it requires. With these facts in mind it must be evident that it matters little whether we use general or local anesthetics, our results will not be perfect unless we are skilled in their manipulation.

2. *Post-operative swelling, sloughing, and necrosis.* Post-operative swelling, sloughing, and necrosis are said to frequently follow the use of local anesthetics. Too often sequence is confounded with consequence. Many of those present have doubtless seen cases of swelling, sloughing, and necrosis occur after extraction when no local anesthetic had been employed. These conditions are particularly prone to develop in individuals debilitated by acute disease or suffering from some constitutional affection such as anemia, tuberculosis, or syphilis. Local causes, such as traumatism incident to difficult extraction, infection from pre-existing abscesses and the accidental presence of virulent germs in the mouth, often play an important rôle.

It must be admitted that the improper use of local anesthetics may determine one of the accidents above referred to. It is quite conceivable that fluid injected beneath the periosteum may interfere with the nutrition of the bone sufficiently to give rise to necrosis. Again, improper aseptic technique as regards instruments, solution, or the mouth, may give rise to infection of the tissues with destructive micro-organisms.

Admitting that there may be some influence following the use of local anesthetics tending to temporarily lower the resisting power of the tissues to which they have been applied, yet danger can be forestalled by the vigorous application of antiseptics before, during, and after the operative procedure.

But it is a question whether these dangers have not been over-estimated. Solutions of cocain and eucain are used beneath the skin, upon the mucous membranes of the nose and eyes, and even injected directly into the spinal canal, without danger to the patient so long as proper precautions are taken. Experience with the use of cocain upon such a delicate structure as the spinal cord is sufficient proof of the fact that the drug *per se* exerts no injurious influence upon nerve tissue. Therefore necrosis and swelling must be explained upon some other grounds.

In the production of analgesia by refrigeration of the part, destruction of the tissue might result as does chilblain from an excessive exposure to cold. With due caution, however, this can be prevented.

3. *The danger of systemic poisoning.* It cannot be denied that the use of cocain is attended with some risk owing to the varying degree of susceptibility of different individuals to this drug. Ordinarily, however, the amount necessary to produce local anesthesia is not sufficient to produce untoward symptoms. In cases of poisoning from small doses, whilst alarming symptoms may be exhibited, these usually subside without injury to the patient. Fatal cases of cocain poisoning are rare. If cocain can be injected beneath the skin and beneath the dura mater of the spinal cord without harm to the patient, there is no reason why it cannot be



used in the mouth. Too frequently the operator becomes alarmed by manifestations which are referable to psychic disturbances rather than to the influence of the drug upon the vital centers. The dose of the drug used is, of course, a matter of great importance. Ordinarily a one-eighth grain of cocain hydrochlorate may be injected without much liability to toxic symptoms. If one desires, however, to obviate the danger of systemic poisoning, he may substitute for cocain the less toxic drug, beta-eucain. The employment of anesthetic mixtures the active strength of which is unknown to the dentist is to be strongly deprecated.

I trust that the presentation of this paper will evoke a free expression of opinion. We are all in search of the truth, and any information which will shed light on the advantages or disadvantages of local anesthesia should not be withheld. Dentists should be encouraged to publish unfavorable results and complications as well as favorable reports, and these should be dispassionately adjudged by the profession.

Personally, I only employ local anesthetics when for some reason nitrous oxid will not answer my purpose. I believe local anesthetics should have a distinct place in dental surgery. Properly employed in judiciously selected cases they give results satisfactory alike to the dentist and the patient. They do not supplant the use of nitrous oxid and other general anesthetics, but merely supplement them.

---

## PORCELAIN INLAY WORK.

BY GEO. EVANS, D.D.S., NEW YORK CITY.

(Read before the First District Dental Society of the State of New York.)

**P**ORCELAIN dental art has of late very generally engaged the attention of the profession. That artistic operations can be effected by the entire, or almost entire, use of porcelain is recognized; the practicability and reliability of porcelain as a material, and the methods its use involves, though strongly indorsed by many that practice them, are being quietly considered, as well as questioned, as yet, by a large proportion of the profession.

With these conditions in mind to influence me, I intend this evening to discuss the subject and likewise present some of my experimental and practical work. I will avoid as much as possible explanations of methods that have been given by others, and that are generally understood.

The first proposition I will discuss is, When and where, in the teeth, should porcelain inlays be used? I have not as yet heard that the most enthusiastic porcelain inlay worker has claimed that in porcelain we have a material that can be classed with gold as an agent for reliability and permanence, especially for the front teeth; or with amalgam, in many cases, for the back ones. Then, in a few words, the use of porcelain inlays should be confined to that class of operations where, necessarily, the esthetic is preferably to be considered before durability.

The next question is, What class or character of cavities demand this consideration? This is briefly answered by stating, Those cavities that come prominently within the line of vision of an observer, and that if filled with gold would for that reason be objectionable.

Under these conditions, we will now consider what these cavities are. I class them as follows: (A) Cervico-labial, in the upper front teeth. (B) Approximal, in the upper or lower front teeth. (C) Fractured corners and cases requiring restoration of contour. By limiting the necessity for the use of porcelain in these cavities to such cases only where patients, in conversation or laughing, move the lips so as to actually expose the cavities, the percentage requiring porcelain is reduced to a very moderate one. Proper conduct of operations with gold will also reduce it. In approximal cavities in the upper incisor and canine teeth the display of gold indulged in by a large proportion of dentists may be in a measure, or entirely, obviated by previously securing a wide space, preserving all of the labial wall of the enamel possible, and operating from the palatal

FIG. 1.



FIG. 2.



FIG. 3.



side. The palatal wall is by many trimmed away, slightly or to some extent, to obtain space and facilitate the operation by permitting the work to be done from the front.

Fig. 1 represents a filling in an incisor which by different conduct of operation might have been performed so as to give a result such as is exhibited in Fig. 2. In a large proportion of moderate-sized cavities of this class, by special manipulation, the gold can be rendered nearly, or entirely, unobservable. This can be accomplished by giving a slightly cup-shaped form to the central portion of the gold, gradually tapering to the inner edge at the palatal side, while the integrity of the edges of gold at the margins is fully preserved, as shown at G, Fig. 3. Very narrow polishing strips (one-sixteenth of an inch, which can be formed by cutting with scissors from a wider one) facilitate this part of the work. The specimen I hand you, which is a central incisor, has a cavity filled with gold the surface of which has been finished in the way described. When viewed from the front, and even partly at the side containing the filling, the gold is invisible.

When non-adhesive gold was in use more than at present, the surface of gold fillings inclined more to this shape. With the advent of the use of adhesive gold began an era in American dentistry of extensive cutting or removal of enamel, and a display of

gold in operations previously unknown, and at times questionable, as it seemed as though it were prompted as much by a desire to display gold as to facilitate or better the operations. I am aware, though, that in America there is a certain proportion of people in every community who admire the appearance of gold in the front teeth, even to the extent of the presence of a gold crown on an upper incisor. But to persons of refinement, especially Europeans, this display of gold is displeasing, and only to be tolerated in certain cases where the conditions render it necessary. In our profession true art is the concealment of our art. The American dentist will be called on to consider this axiom more in the future than he has in the past.

As I have tried to outline to you, the use of porcelain is not necessarily contraindicated to that of gold when the latter is properly manipulated, except in a small percentage of cases; but I also will acknowledge that when conditions call for the use of porcelain the demand will be most imperative.

#### PORCELAIN INLAYS.

*The Matrix.* In the construction of porcelain inlays the success of the operation largely depends on the matrix. Its perfect adaptation to the cavity, the preservation of its form intact on removal therefrom and during the construction of the inlay are all essential. A question I will here consider is, What are the respective merits of gold and platinum foils, in their various grades, for forming the matrix?

Gold, most decidedly, has the merit of being more easily adapted to the walls, and especially to the margins, of a cavity than platinum. We all are aware how closely a layer of foil, under the pressure of cotton or spunk, can be conformed to a given surface. Platinum can also be closely fitted, but in cavities where small angles or curves exist it is more difficult to secure the accuracy with it which can so easily be obtained with gold.

Another point for consideration is the alteration of the gauge of the foil in the formation of the matrix. Both gold and platinum are changed in gauge at different points of the cavity by the stretching or burnishing.

Most experts use platinum foil  $\frac{1}{1000}$  of an inch in gauge for the high-fusing porcelain. The foil is placed across the cavity and cut large enough to extend on each side, so that it can be held securely in position. If it is a cervical cavity, the platinum is allowed to extend at least over the surface of the adjoining teeth. While firmly held against the slightest movement, the foil is carefully brought down in the cavity by burnishing. This process of burnishing is begun at the edges of the cavity with a circular motion of the burnisher around the cavity, and as the platinum sinks into the cavity the metal is gradually brought down toward the sides, and finally in the center. If this method was not adopted, and the metal was first pressed down in the center, the foil would be torn to an extent that would spoil it as a matrix.

In the adaptation of gold foil to the form of the cavity the gold



is first brought down in the center, then to the sides, and finally on to the surface of the tooth and edges of the cavity.

It is very evident that in this process of adaptation of either gold or platinum to a cavity the metal is unevenly stretched. Platinum manipulated in the manner described will have a tendency to be thicker at the extreme edge of the cavity than in the center.

In the final burnishing of the margins of a gold foil matrix the metal undoubtedly becomes thinner at the edges than it is at the bottom, especially when we consider its character as compared with platinum. This condition is favorable to an inlay made with a gold matrix in comparison with one of platinum, and is the way in which we can account for the wonderful closeness of the approximating edges seemingly so easily obtained in operations when a gold foil matrix has been used. The difference in fit at the edges of the inlays made in gold and platinum matrices is that the edges of the former seem to come more uniformly in contact with the edges of the enamel of the tooth; but, like most operators, I now find that I can entirely overcome this difficulty in the use of platinum by adjusting the matrix in the cavity after the first baking of the porcelain and reburnishing the edges, which process I will refer to further on. The use of platinum  $\frac{1}{2000}$  of an inch in thickness has been recommended as capable of manipulation in the same manner as gold, but this thinness has not in my hands permitted a satisfactory adaptation and result, especially when used in the manner I have described for gold.

The use of *molds* or *dies* of the cavity to construct a matrix and inlay, independent of fitting to the tooth until finished, is a method I do not approve of, and I think is not generally practiced. The reasons are: the time consumed in the construction of such a matrix or die, and doubtful accuracy in the fit of the finished inlay.

The only method by which accuracy is likely to be obtained, in my opinion, is by taking an impression of the cavity with oxyphosphate. This is done by dusting the cavity with pulverized soapstone, and then inserting a pellet of quick-setting oxyphosphate, which extends well over the edges of the cavity; when set, removing and making a mold of the same material. The surface of the impression should be dusted with soapstone to prevent adhesion of the oxyphosphate that is used to form the mold.

When the operator wishes the inlay constructed by an assistant, or desires to do the work during the absence of the patient, the most advisable plan is to form the matrix, insert beeswax extending over the edges on the surface of the metal, remove, and invest in marble-dust and plaster. The wax must be very evenly depressed with a spatula, using soapstone to prevent adhesion of the wax to the instrument before removal of the matrix from the cavity.

At the present time in discussing porcelain inlay work the most important feature presented for our consideration is that of the respective merits of the different grades of porcelain offered for use by manufacturers. These preparations are divided into two classes, designated "low-fusing" and "high-fusing." These terms simply imply that the low-fusing fuses below the melting-point

of pure gold, and the high-fusing above that point. The terms otherwise have no significance regarding the character of the porcelain.

We will first mention the properties that chiefly qualify a porcelain body for inlay work, and then consider the respective merits of the classes and grades. The properties are, first, least amount of shrinkage in each and all of the several fusings necessary to complete the work that may be in hand; second, evidence of least tendency to porosity and to greatest density of porcelain in each and every fusing; third, exhibition of greatest strength; fourth, preservation of color in numerous fusings.

I have here for examination exhibits of fusings of porcelain, which I think will materially aid in judging their respective merits for inlay work. They are the Jenkins, Ash's low-fusing and high-fusing, the Whiteley, The S. S. White Dental Mfg. Co.'s, and Close's. The S. S. White Co.'s porcelain has been but recently offered to us, and is the product of most careful investigation of the subject and its requirements. In character the porcelain is high-fusing. One powder, ground exceedingly fine, is for inlay work, and the other, which is a little coarser and fuses slightly higher, is a basal or foundation porcelain, principally intended for crowns or bridge-work. Both powders are made in twelve exactly corresponding colors, an arrangement that facilitates their combined use. One of the twelve jars in each outfit contains a colorless or reducing body for toning down or reducing to one or more of the others, and for producing variety of shade. I have stamped a number of matrices of a half-oval or horseshoe shape, about five-eighths of an inch in width. (Fig. 4.) I placed three of these matrices to each make of inlay porcelain, and carefully filled them with the body and fused it. The matrices marked A [exhibiting] received one fusing; those marked B two fusings, and those marked C three fusings. The shrinkage was filled in with more body after the first and second fusings respectively. The two other matrices are the S. S. White, F, and the Close foundation or basal porcelain, F, F. The names of the different porcelains were given in the order of their fusing-points, from that of the Jenkins to the Close foundation porcelain.

An examination of the exhibits of the inlay porcelains plainly shows that the greatest amount of shrinkage, as specially evidenced in the A matrices, containing the first fusings, has taken place in the lowest-fusing powders, and gradually lessen along the line to that of the highest-fusing, the S. S. White, which shows the least. The same tendency is seen in the B matrices of the second fusing, but in a less degree; and also to a slight extent in the C matrices, the third fusings.

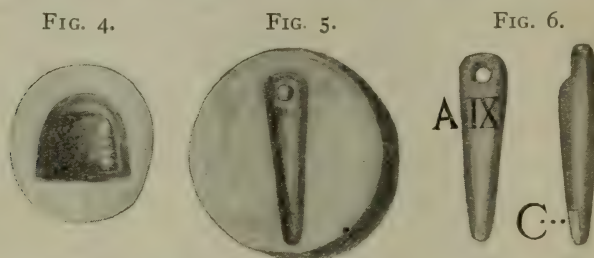
The tendency of the low-fusing porcelains appears to be to ball up or assume a spherical form, and that of the high-fusing to contract to a greater or less degree, as shown by the exhibits. In the exhibits of the foundation porcelain the Close's shows much more contraction than the S. S. White, although fusing higher.

Porosity of porcelain in the first and subsequent fusings, and

lack of maintenance of the color of the porcelain, is much oftener observed in the lower-fusing porcelains than in the higher. In the lower-fusing, glass must necessarily exist as an ingredient of the component parts in a larger proportion than in the higher. To this is attributed many difficulties found in their use, especially brittleness. A greater tendency to retention of color is exhibited in the higher-fusing porcelains, an important matter in difficult operations, when repeated fusings may be necessary.

In inlay work the selection of the proper comparative shade is often difficult. If made from samples, it should be from those made from the basal colors, and not by artificial teeth, which are of different shades from the neck to the incisive edge.

*Sample Shades.* Special sample shades can be made at different times, the formulæ entered in a book and numbered. Taking, for instance, the S. S. White basal colors, which are numbered 81 to 92, and the foundation porcelain 61 to 72,  $\frac{1}{61} + \frac{3}{63} = IX$ . The colors



are mixed to a doughy consistence on a slab, and a mold made of fusible metal, as suggested by Dr. V. W. Gilbert,\* such as is shown in Fig. 5, slightly oiled, is pressed down on the mass and removed. The surplus is then trimmed at the edges and the porcelain baked, resulting in a sample such as is shown in Fig. 6. A simpler way for many, though, will be to shape the mass of porcelain on a flat piece of platinum plate, approximating the form shown at A in Fig. 6. Flatten one end, and make a hole with an instrument. Flaws can be repaired by a second baking. The sample shade can be marked, as shown in Fig. 6, in Roman numerals with a disk. If the point of the sample is ground, as shown at c in Fig. 6, the indentation can be covered with oxyphosphate, and change of shade, if any, will be exhibited.

For mixing porcelain body, I prefer distilled or filtered water to either alcohol and water or alcohol, as evaporation of the latter takes place too rapidly. In the high-fusing I find the best plan is to hold the platinum matrix with clamp tweezers (see Fig. 7), and carry the body in a dough-like consistence, a portion at a time, on the point of a very small camel's-hair brush, in preference to a spatula; drop it in position in the matrix, and by sharp taps on the back of the tweezers settle the body down in the matrix. This tapping precipitates the particles of the porcelain closely together

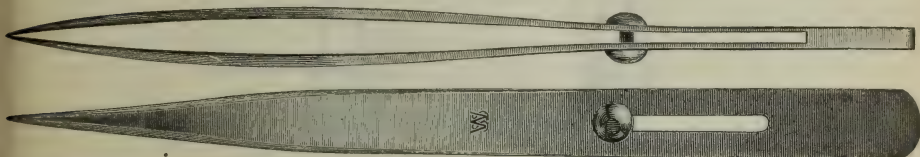
\*"Some Thoughts on Porcelain Work," by V. Walter Gilbert. D.D.S., Philadelphia, Pa. See DENTAL COSMOS, July, 1901, p. 727.



and sends the moisture to the surface at each tapping; this moisture can be absorbed with a piece of blotting-paper cut to a point. By this means you get the least possible shrinkage in the baking.

In contour operations, in the first baking it is well to use a basal body or to insert a small piece of porcelain. By a basal body I mean one that is used to form the foundation or bottom of the inlay and fires higher than the body used to construct the remaining portion. I would suggest the use of a basal body especially in a case where the bottom of the platinum matrix is cracked or broken. This basal body in the first baking covers over these breaks, and remains intact during application of the rest of the lower-fusing porcelain used to form or build up the inlay. This piece of basal porcelain, when baked in the bottom of a matrix, gives form and rigidity to the base. The matrix can then be adjusted in the cavity in the natural tooth, and while firmly held in position by pressure exerted on the center of the porcelain the platinum can be reburnished at the edges of the cavity. In this second burnishing the platinum, which is then extremely soft from

FIG. 7.



the annealing it received in the baking of the body, is somewhat additionally thinned, and is adapted with great accuracy. There can be little if any change in the subsequent bakings that will disturb this accuracy of the edges, so far as the base of the inlay is concerned, as it will not be altered in shape by the application of the lower-fusing porcelain used to finish the inlay.

The Close porcelain body can be used as a foundation, if the matrix is deep enough, without affecting the shade of the inlay.

In the Whiteley outfit a light-colored, very high-fusing porcelain powder is furnished, which by mixture with any of the powders forms a foundation body. In the S. S. White outfit the inlay and foundation powders correspond in color, No. 81 of the inlay powders exactly matching No. 61 of the foundation, and so on. This arrangement, an innovation in its way, is a decided advantage, as shade will not be at all affected. When desirable, it permits the first baking to be done with the basal or foundation powder, the next with a mixture of the basal and inlay, and the third or final baking with the inlay alone without disturbance of previous bakings.

In the formation of a difficult corner to a broken tooth a small piece of porcelain can be placed in the porcelain body in the matrix, and after the first baking, when the matrix is fitted in the cavity, this projecting piece of porcelain can be trimmed off with wheels to the exact line of the required contour. This reduces and simplifies the rest of the operation to the filling in of the inequali-

ties with the porcelain body, and insures the result of the operation respecting contour.

Where a large corner is made to an upper incisor tooth, if the "bite" is close, I suggest giving a depressed shape to the porcelain at the point of the occlusion of the lower teeth, and also the removal with a wheel of enough of the outer incisive edge of the lower antagonizing tooth to leave a space—that of thin cardboard—between.

Different shades cannot be very well given to a porcelain inlay, as the space is generally too small. Shading is best effected by touching the surface of the finished inlay with a proper shade of enamel, of the kind used for such purposes.

*Combination of Porcelain Inlay and Gold Filling.* In a case of combined approximal and cervical decay, where the shape is unfavorable to the formation of an entire porcelain inlay, or undesirable, I fill the approximal cavity with adhesive gold extending into

FIG. 8.



FIG. 9.



the cervical one, trim the edge of the gold, and then form and insert the porcelain inlay in the cervical cavity, as illustrated in Fig. 8.

*Etching of the Base of Porcelain Inlay.* As the base of the inlay is too smooth to secure a perfect adhesion of the cement to the surface of its base it is necessary to roughen or indent the base. But a line must be left untouched around the margins. Where the inlay can be well indented by a wheel, it will be sufficient, but when the inlay is so small or is of such a shape that indentations cannot be well inserted, then etching has to be relied upon. It is proposed that this be done by the use of hydrofluoric acid. The use of acid, however, being troublesome and tedious to me, I have resorted to the use of a diamond point. By the use of this point, mounted, with the aid of the dental engine and a mounted lens, I can instantly etch the smallest inlay satisfactorily. I can so quickly etch the surface of an inlay that I generally etch as well as indent all sizes. Excessive and deep indentation of an inlay not only weakens it, rendering it liable to fracture in insertion or use, but also in some cases may slightly affect the shade.

When cemented, the retention of the inlay in the cavity, so far as the adhesion of the cement is concerned, is a very important part to be considered, and is one the neglect of which is liable to cause the failure of an otherwise creditable operation.

*Cementation.* The effect of cement on the shade of an inlay has been much discussed by experts. It is caused by the translucency

of the porcelain. This translucency is considerably increased, especially in the low-fusing porcelain, by too frequent or high bakings. The effect of the cement on the shade can be quite accurately determined previously by first mixing a little of the powder of the cement with water, placing it in the cavity of the tooth, and inserting the inlay. The shade of the cement should be in accordance with that of the inlay, but a trifle lighter.

The non-reliable character of the cement we have to depend on at present to secure porcelain inlays in cavities is what principally raises the question of durability in this class of operations. The fact of the matter is, there is no oxyphosphate cement in use to-day that is insoluble when inserted in cavities, in all mouths, even though the greatest care and skill be exercised in its use. That there are some preparations that closely approach insolubility in a few mouths is the best we can say for it. Indeed, I question very much whether it is possible to invent a cement universally insoluble in the human mouth, so many conditions has it to contend with. Should such a cement be invented, it would to a great extent take the place of porcelain itself, and indeed other materials that at present require skill in their manipulation, to which skill is largely attributed the position our art has acquired as a profession. When the operator in porcelain inlays asks for an insoluble cement, as he now does, he asks for something next to impossible to obtain, and something that has been experimented for for years.

In the cementation of porcelain inlays with oxyphosphate cement there is one property regarding this cement that has much in its favor,—that is its adhesiveness to tooth-structure and porcelain. At those parts distant from the edges it will hold the inlay with great tenacity in position. Its weakness for the purpose of cementation is its solubility at the edges. This being the case, the question of durability of porcelain inlays evolves itself into the fact that *the durability of a porcelain inlay depends on the closeness of its meeting edges with those of the enamel at every point*. The requirement, therefore, calls for a high grade of skill, as well as care in details, on the part of the operator, for on this will the success of this class of operations principally depend.

In my opinion, like most innovations in our art, porcelain inlay work will run the gauntlet of approbation and condemnation, for these reasons, until a better understanding of the subject is more generally entertained, and skill is acknowledged as the prime factor for success. My experience has shown me that success in the cementation of inlays depends on the manner in which oxyphosphate is used, as well as on its quality. The cement should be most thoroughly mixed, and its consistence should be as nearly that of a thick paste as possible without too great an impairment of its adhesiveness. A cream-like consistence, such as is used in gold crown-work, I have found to be not reliable. A cement that can be mixed thick and still retain its adhesiveness, and yet in that condition easily ooze out from under and around an inlay at the edges under properly exerted pressure, is the most suitable. In these respects I have found none superior, if equal, to the Harvard.



In the cementation of an inlay it is well to be able instantly to correctly insert it in the cavity, as its removal and reinsertion is objectionable. With oval-shaped cavities, mistakes are liable to occur. I avoid this by adjusting the inlay in the cavity and marking the inlay with the point of a fine ink pen, and also, when necessary, the natural tooth, and drying with hot air. (Fig. 9.) When the cement has set moderately hard, I remove surplus from the adjoining surface of the tooth, varnish the margins and inlay with a very thin mixture of chloroform and balsam fir, and then flow melted paraffin with a hot spatula over the parts, which I allow to remain until the next day. This varnish adheres with great tenacity to the surfaces and the paraffin to the varnish, and most effectually excludes moisture from the cement for the required time, thus insuring the best results.

In conclusion I will state that inlay work requires skill in construction and judgment in application. It is an innovation in practice that has come to stay. As a method it will necessarily have to be generally adopted in dental practice.

---

## PROCEEDINGS OF SOCIETIES.

---

### INTERNATIONAL DENTAL FEDERATION.

FOLLOWING is a *résumé* of the principal features of the organization of the International Dental Federation and of the International Commission of Education, created by authority of the delegates from the several countries represented in the Third International Dental Congress, held in Paris, August, 1900.

#### INTERNATIONAL DENTAL FEDERATION.

The first meeting of the Executive Council of the International Dental Federation was held in Paris, August 15, 1900. The members of the Council were appointed by the Third International Dental Congress, held in that city in August, 1900. At this meeting the organization of the Federation was discussed, several resolutions were passed, and the following members were appointed to constitute the International Commission of Education: Drs. Kirk, Cunningham, Sandstedt, Queudot, Brophy, Hesse, Aguilar, Martinier, Patterson, Arkövy, Godon, Guillermin, Grevers, Giaria, Limberg, Rosenthal, and Burne.

A meeting of the Subcommittee, of which Drs. Godon, Cunningham, and Sauvez were members, was held on November 28, 1900, to discuss matters of organization. The Subcommittee, before adjourning, decided to hold another meeting in Paris, May 27, 1901. At this meeting several resolutions regarding the meeting of the International Dental Federation were passed. The Subcommittee met again in London, August 3, 1901. At this meeting the Subcommittee decided that the next meeting of the Executive Council should be held in London, August 4, 1901.

On the date fixed by the Subcommittee, the Executive Council held its meeting, and discussed questions of organization regarding the future meetings of the Federation. As stated, the Executive Council met next day. At this meeting was read the report which here follows:

DR. SAUVEZ' REPORT.

*Gentlemen and Honored Confrères*,—Permit me to thank you for the great honor that you have conferred upon me by appointing me secretary of the Executive Council of the International Dental Federation.

The second meeting of the Council will take place to-day, beginning the labors which will come to an end in Cambridge, August 7th.

The report that I read to you at the beginning of this meeting has informed you of the present situation.

You will recall the creation of the International Dental Federation. It was at the last meeting of the International Dental Congress in Paris, 1900, that it was decided to organize this Federation, in accordance with the requests presented to and accepted by the Congress. You will also remember that at that meeting we were appointed members of the Executive Council. I mention these points simply because I want you to remember that we are the legal representatives of the 1200 members of the International Dental Congress. Our powers have been transmitted to us by that body, and will expire at the next Congress. We have emanated directly from the Congress and we must report at its next meeting the course and result of our work.

The purpose of the Federation, as manifested in its constitution, consists especially in providing for international dental congresses and reunions; in maintaining and in extending the relations between the several national committees and societies, and in organizing the several international commissions that it may deem necessary to create; in *résumé*, the International Dental Federation must organize everything that may contribute to the advancement of odontological science.

If that be the purpose of the Federation, then the *rôle* of its Executive Council must be to plan the regulations of the Federation, to supervise their execution, to fix the dates and places of meeting of the international reunions, to summon the several commissions, to carry out the decisions of the Congress, and to examine the propositions submitted to it.

It is according to this order of ideas and in this spirit that we have been working since our last meeting. You will remember that a subcommittee of three members was appointed in order to insure the preparation of the constitution during the year 1900-1901. That committee held its first meeting on November 28, 1900, in Paris, at Dr. Godon's residence. The Subcommittee decided among other things upon the publication of the *Bulletin of the Executive Council of the International Dental Federation* in four languages; this bulletin to serve as the official organ of the Executive Council. *l'Odontologie* has undertaken gratuitously the publication, and several foreign journals have courteously republished the text of said bulletin. We tender them our thanks in the name of the Council.

The members of the Executive Council and of the International Commission of Education have been notified of their appointment to said committees.

A second meeting of the Subcommittee was held in Paris, May 27th, also at Dr. Godon's residence, as reported in the proceedings. It was at that meeting that the Subcommittee prepared the regulations that we will presently submit to your consideration. It was also at that meeting that we organized the present session of the Council in London, profiting by the attraction offered by the annual meeting of the British Dental Association and that of the American Dental Society of Europe.

We have reason to feel satisfied with the result obtained, for all the members that accepted the nominations agreed also to come here. Dr. Pichler is the only one that resigned, and his resignation was on account of ill health.

This first meeting is starting under happy auspices, and is being made delightful by the most cordial reception and the kind and generous hospitality tendered us by our English *confrères*. I think that I shall be acting as your interpreter in asking Mr. Cunningham to transmit our sincere thanks to the president of the British Dental Association.

This first session will emphasize in an indisputable manner the existence of the Executive Council, and hence of the International Dental Federation. This first session seems to assure us that the coming meetings will be followed with as much attention even by the gentlemen of far-off countries, such as Dr. Harlan, and that the preparation for the next Congress, which is our principal *raison d'être*, will be made with the assured assistance of the *confrères* best qualified for this kind of work. It is not our intention in these too short sessions to especially call your attention to the past; we will direct our efforts to the present and future. Consequently we must show you how important it is that the national federations and the various societies should cultivate intimate relations with the Executive Council,—not because the Council desires to interfere in questions of a national character. The Council acts only as a counselor and organizer, leaving every Federation or society completely free and independent, and master of its own acts each in its respective country. This Council must form the legal union between the societies of different nations.

We must also endeavor to represent this Council in our various countries not as though it were a sort of secret committee occupied with great international questions, but as a committee of union, solidarity, and confraternity, ready to receive all the suggestions, all the propositions of the professional federations or societies, and to study them in order to reach impartial conclusions. We must represent that Council conscious of the fact that it is the outcome of a universal election, and that it is a body beneficial, if not essential, to the good understanding and confraternity of the dentists of all countries. Our particular personalities cease to exist; they will modify themselves and disappear. The body alone exists; the cells which compose it are called upon to undergo transformations, to grow old, to be replaced by others; but that matters not. What we must insure is the existence, the vitality, the power of the organ, which is the Executive Council, the active part and the representative of the International Dental Federation. This is why all the efforts of the members must tend to insure the good relations of the Council with the federations.

Our efforts should also be directed toward the formation of solid and well united federations between the national societies. In France all our efforts have been made toward that end, and we can announce to-day that the French dental federation is solidly established. Its first session will be held in Corsica in September, as the Section on Odontology of the French Association for the Advancement of Science, thanks to the efforts of President Godon.

I have yet to speak to you on the Commission of Education, on its organization and on the work we are going to ask them to perform.

These several points will be the objects of a new report, which will be presented to you in the near future.

In the meanwhile I beg you, gentlemen and honored *confrères*, to pardon my having occupied your attention for such a long time. Before concluding, I will also ask you to thank Mr. Cunningham, the principal organizer of this session, who has been instrumental in assuring us the honor of a reception in Cambridge, in that ancient university whose reputation has been world-wide for centuries.

The Council adopted this report.

At the next meeting the Council proceeded to vote for the appointment of officers. The result of the vote for president was as follows: Dr. Godon, 5; Dr. Cunningham, 2.

Dr. Godon declined to accept the chairmanship, and asked for a second balloting, which, however, gave the same results, when Dr. Godon accepted the office.



The balloting for vice-presidents gave the following results: Dr. Cunningham, 6; Dr. Förberg, 4; Dr. Harlan, 1; Dr. Hesse, 1. Consequently Drs. Cunningham and Förberg were elected vice-presidents.

The Council decided not to vote for secretary-general, but to appoint Dr. Sauvez by acclamation.

On motion of Dr. Brophy, Dr. Pearson, of Canada, was appointed adjunct member of the Commission of Education.

Subsequent meetings were held August 7 and 8, 1901. The plan of appointing a Commission of Public Dental Hygiene was adopted at the latter meeting, and Dr. Frank was entrusted with the initial work of such commission.

Dr. Aguilar presented a motion, which, after modification by Dr. Godon, read as follows:

The International Dental Federation is represented by an Executive Council composed of members elected by the Congress, which represented the different countries.

At this meeting the question of deciding upon the date and place of meeting of the next International Dental Congress was brought up, and was referred to the next meeting of the Federation, to be held in Stockholm.

#### INTERNATIONAL COMMISSION OF EDUCATION.

The first meeting of the Commission, held in London, August 4, 1901, was called to order at 10.30 A.M. by Dr. Ch. Godon, president of the International Dental Federation.

The following members of the Commission were present: Drs. Aguilar, Brophy, Cunningham, Godon, Hesse, Kirk, Roy, Patterson, Queudot, and Rosenthal.

According to the decision of the Executive Council, the delegates of the several national societies to the London meeting were admitted as adjunct members of the commission for the session of 1901. The members admitted under these conditions are: Drs. Haderup, of Stark; Witthaus, of Rotterdam; Frank, Zsigmondy, and Weiser, of Vienna; Viau and Choquet, of Paris; Baruch, Quartermann, and Huet, of Brussels, and Bryan, of Basel.

Dr. CUNNINGHAM invited the members of the commission to visit the Institute of Technology.

The secretary-general read the following report to the Commission of Education on behalf of the Executive Council:

*Gentlemen and Honored Confrères*.—The International Commission of Education, which to-day holds its first meeting, has been created pursuant to the adoption of resolutions 14 and 16 presented to the International Dental Congress. [See DENTAL COSMOS, October, 1901, page 1163.]

Following the adoption of these resolutions the Executive Council of the International Dental Federation appointed the following members to the International Commission of Education: Drs. Aguilar, Brophy, Cunningham, Godon, Hesse, Kirk, Roy, Patterson, Queudot, and Rosenthal.

Besides the aforesaid members, the Executive Council having decided that all the members of the council were to take part in the labors of the International Commission of Education, the following names should be added: Drs. Harlan, Förberg, and Sauvez.

The Executive Council also decided to admit as adjunct members of the commission, with the right to take part in the discussions, the following delegates to the Executive Council: Drs. Haderup, of Copenhagen; Baruch, Quartermann, and Huet, of Belgium; Witthaus, of Rotterdam; Bryan, of Basel; Viau and Choquet, of Paris; Frank, Weiser, and Zsigmondy, of Vienna.

The number of active members of the Commission of Education can be increased by the Executive Council.

The commission will be represented by the following officers: A president, two vice-presidents, and secretary.

The object of the International Commission of Education is as follows:

(1) To prepare a program of the theoretical and practical subjects that the dentist should take up.

(2) To prepare reports for the following sessions on important questions of dental education.

(3) To present at the international dental congresses the questions of greater importance.

(4) To create and organize the necessary subcommittees corresponding to the several sections of the International Dental Congress of 1900.

(5) To create, maintain, and make closer the relations between the different dental schools.

(6) In a general way, to organize anything that may contribute toward the improvement of dental education.

The functions of the officers of the International Commission of Education are:

(1) To assure and to limit the work of this commission. (2) To bring together the several subcommittees. (3) To submit to the Executive Council the resolutions of the commission. (4) To examine the propositions which are addressed to it by the Executive Council or by the federations or societies.

Now that the constitution, the working, the rôle and the purpose of the International Commission of Education have been pointed out, we will proceed to examine the conditions of dental education from an international point of view. It seems, however, impossible to enter into a limited discussion without beginning by a general one.

We must constantly bear in mind that the International Commission of Education appointed by the Executive Council must not try to establish the same system of dental education in all countries. The dentists of different countries form a series of dissimilar groups from the standpoints of number and professional status, and march in the road of progress with more or less advanced ideas according to the measure of maturity of the profession in each country.

We wish to insist upon this point in order to say once again that all the international commissions, of whatever nature, must be strictly careful not to interfere with such questions as are national, and to allow the latter to be freely discussed by the representatives of the particular countries concerned. Only in this way will it be possible for the commissions to exist, and to do their work without awakening dissatisfaction. The different commissions should act as instruments of union, as organs of progress, and their members should, for the time being, entirely sink their personalities and nationalities in order to work only for an independent and high purpose. These commissions should limit themselves to discussing questions of a large and philosophical character, leaving aside the questions of limited interest.

Dental education is at the present time the subject of much thought and consideration on the part of the leading members of the profession. Only yesterday Mr. Hutchinson, the newly elected president of the British Dental Association, discussed this question. Some time ago Dr. Kirk discussed it in a very interesting publication in the DENTAL COSMOS. While we are here, a meeting consecrated to dental education is being held in the United States. We thus see that this question is discussed the world over.

The Executive Council has preferred to let the commission work freely on its own lines, without requiring from it any reports. What you have to discuss will really comprise the following points:

First. What preliminary knowledge is necessary for the dental student?

Second. What part of the medical and scientific subjects should be taken up, and at what time of the period of training should the study of them be pursued?

Third. What is the importance of theoretical technical knowledge?

Fourth. What is the importance of practical technical knowledge?

Fifth. What are the most appropriate names for the several titles now used throughout the world?

We will call your attention to the reports of Drs. Godon and Roy to the Third International Dental Congress that we have brought once again before your consideration. Also to the reports by Professor Arkövy and Dr. Guillermin; to the 7th, 8th, and 9th resolutions adopted at the Congress, and to the recent article by Professor Kirk.

There cannot be the slightest doubt that with the foregoing basis, and with the officers that you will appoint, a meeting like this will produce the results expected.

You have all come from distant points with a disinterested purpose, in order to occupy yourselves with important educational questions which are of the noblest and most momentous character, as upon them rests the future of the profession.

We are certain that you will know how to elevate your discussions to the level of your exalted task, and that you will work with enthusiasm for the good of the profession and for the sake of humanity.

A report on Dental Education, by Professor Arkövy, was then read by the secretary. Three other communications, by Drs. Guillermin, Métral, and Billeter, were also read at this meeting.

The commission then adjourned to meet on Tuesday, August 6, 1901.

## NEW YORK ODONTOLOGICAL SOCIETY.

A REGULAR meeting of the New York Odontological Society was held on Tuesday evening, April 16, 1901, at the New York Academy of Medicine, No. 17 West Forty-third street, New York city; the president, Dr. W. W. Walker, occupying the chair.

### INCIDENTS OF OFFICE PRACTICE.

The PRESIDENT. We have quite a number of incidents to-night. We have with us Mr. Jones, a member of the graduating class of the New York College of Dentistry, who has a very interesting case to present. Dr. Goldan, our old friend, and Dr. Perry also have some interesting things to show us. We will hear from Mr. Jones first.

Dr. J. BOND LITTIG. This is a very interesting case from the fact that it was so complicated in its nature that it required a great deal of thought and attention to get anything that would answer the purpose, and Mr. Jones has so overcome the difficulties that I thought it worth while to show it to the gentlemen.

Mr. JONES read his paper as follows, explaining the case, and also showed the patient:

Julius Anderson, age forty-five years. By occupation patient is a fireman in Brooklyn. About eighteen months ago he fell from a wagon and was badly injured about the body and head; six months afterward a small white blister or wart-like growth appeared on the



roof of the mouth, on the mucous membrane of the hard palate, subsequently appearing red; and it developed to a considerable size,—about an inch in length,—was oval in shape, and projecting above the surface of the surrounding tissue over one-eighth of an inch, and encircled by a band of proud flesh extended antero-posteriorly from about the center of the arch and toward the left cheek. During the first six months its development was quite rapid. After that time he applied for treatment to a physician, and continued under his care for two weeks. There being no apparent improvement, and the patient having lost eighteen pounds, the treatment was discontinued and he gained in flesh. Subsequently he underwent treatment again for almost six months, which consisted of cauterizing the part, with also the application of iodine.

On November 17th last he was admitted to the Geo. D. Seney Hospital, Brooklyn, where the case was diagnosed as epithelioma of the mucous membrane of the roof of the mouth, involving the mucous membrane over the palatal process of the left maxilla and involving that process to such an extent that it was removed, a section of the maxilla itself being also removed.

Upon examination, the case appears thus: Two large perforations of the hard palate, with soft tissue separating same, opening into left sinus; anteriorly to the perforations of hard palate there is another small opening in the roof of the mouth.

The maxilla extending from the lateral on the one side to the condyle of the left side has been entirely removed; also the whole of the soft palate, leaving but a small portion of the posterior part of hard palate remaining separating the openings in hard and soft palates.

There are in position on the right side a second molar, quite loose, and a second bicuspid. In the lower jaw there are in position the canines and bicuspids on left side.

I have constructed an obturator carrying a tailpiece to close the perforations in both hard and soft palates, and supplying the necessary teeth, with a clasp around the bicuspid, the molar being too loose to permit of clasping; have also made a partial lower plate, carrying teeth and clasping around the canine and bicuspid on the left side.

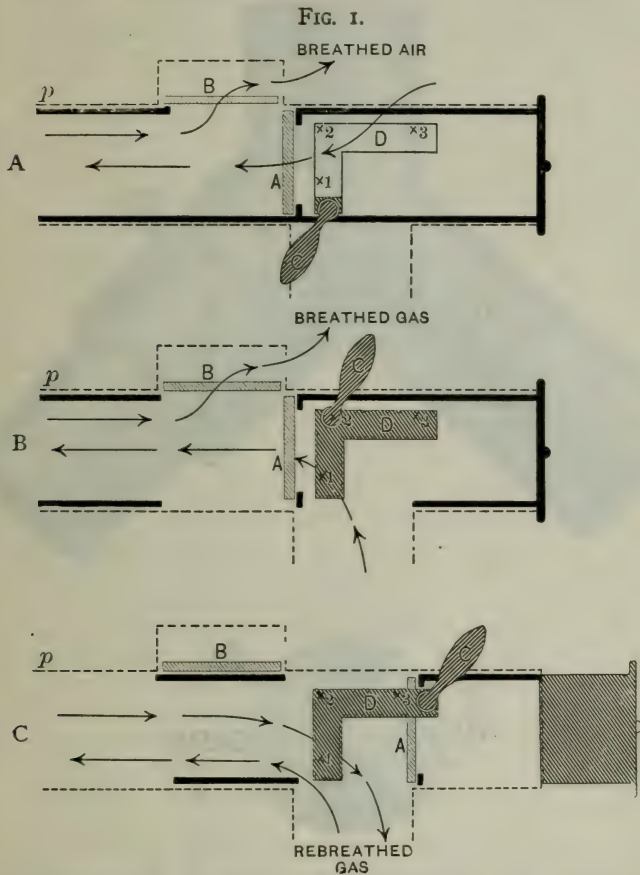
Considerable difficulty in keeping the upper plate in position has been experienced, there being no adhesion whatever; and the springs to be had were found to be of little service in this case. I therefore constructed what might be called a telescopic spiral spring, which I believe will answer every requirement. This is made similar to a telescope, in that it permits of the patient closing and opening the mouth without the plate being disturbed, as the spring piston is always in contact with the lower, thereby keeping the upper in position.

Dr. S. ORMOND GOLDAN exhibited a new apparatus for the administration of nitrous oxid and oxygen.

He said: There are about six apparatuses made for the administration of nitrous oxid and oxygen. We might say seven if we

take into account the one made by Paul Bert, of Paris, who used pressure in order to do his operations in an air-tight chamber. A Viennese dentist, a Dr. Hillischer, devised an apparatus and administered the gases in about thirty-five thousand cases, as he said in his letter to me. There is an instrument by Dr. Hewitt, and one by a Mr. Rumbold, of London, and my own.

The first part of this apparatus was originally devised for nitrous oxid alone. The face-piece is very light, and is aseptic. This shows the diagrammatic representation of the stopcock (Fig. 1),



which has a three-way action. By pushing down the indicator, the patient breathes air; by pushing it up, gas is breathed; and by pushing it up and back, the patient breathes the gas over again. This is useful when one runs short of gas; it can then be breathed over again without harm. For nitrous oxid and oxygen I had the inverted Y-shaped tube made (Fig. 2). When open, the oxygen side is one-half the nitrous oxid tube. It has a revolving obturator inside. (Fig. 3.) We know that anesthesia with nitrous oxid and oxygen can be obtained when the oxygen is mixed to the

extent of from eight to fifteen per cent., and a feature is that for dental purposes it takes a little longer to get the patient anesthetized, but anesthesia is prolonged, which is very valuable for dental purposes. The apparatus is very light. The face-piece is made of celluloid, so one can see the lips and mouth of the patient. It is important to have the tubes correct; the oxygen comes out with much more force than the nitrous oxid.

FIG. 2.

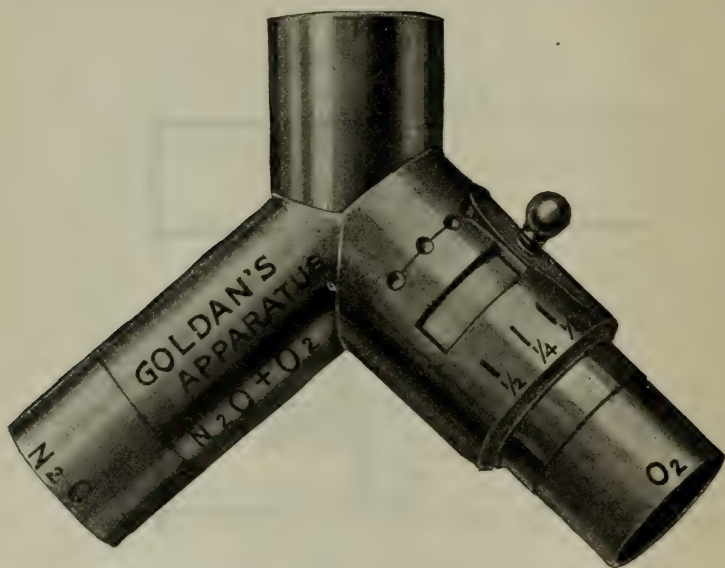
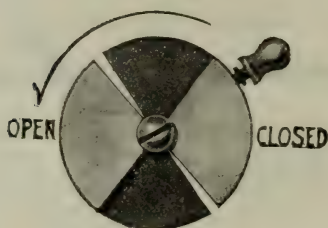


FIG. 3.



[Dr. Goldan here demonstrated the use of the complete apparatus.]

For ordinary anesthesia, the bags should be kept from about one-half to two-thirds full. Having it in the position shown, the patient breathes, from four to six times, nitrous oxid. That eliminates all oxygen from the blood; then immediately oxygen is turned on,—from three to six per cent.; it is well to begin with three and gradually increase it. You get beautiful anesthesia with a good color and, as it must occur to every one, an ideal anesthesia for dental and surgical purposes.



Of course, in a long operation the method is very expensive. The nitrous oxid is two and the oxygen five cents per gallon, and in a long operation it would amount to quite an item; but in an ordinary dental operation there is no anesthetic superior to it.

The cylinders are worked with the pedal attachment, avoiding the use of the hands for this purpose. They can only be obtained in England. They are extremely portable, and consequently give a great advantage over the old pattern cylinders.

Dr. WM. JARVIE. You say it takes a little longer to get the anesthesia. In what proportion?

Dr. GOLDAN. From one to three minutes. If the patient inhales from three to five minutes, you get an anesthesia of from two to three minutes. With ordinary gas, we get only about one minute.

Dr. S. G. PERRY. I do not think it is necessary to make any remarks in regard to this Electric Light, which I devised some years ago, and which has been made by Mr. Drum for some of my friends. I said I would be glad to have him make it for any one who wished it, and he has undertaken to have some of them made. At my suggestion, he brought this here that I might show it and there might be a better understanding of it. He has made some changes in it. Mine slips up and down and rotates, and is held in position with a thumb-screw; but he has made a joint here for throwing it a little more out of the way, and that is quite an improvement, although I am so accustomed to mine that it gives me no trouble. When I use it I bring it to the right height and pull it this way or that, as the case may be, and adjust it where I want it, turn on the light, and in this way I am myself shielded from the glare of the light. I do not remember to have been annoyed with it, although it might be supposed that it is trying to the eyes. I have not found it so, but have found it so useful that I have sometimes used it when the sun was shining on bright days. You may think that very strange, but it is so concentrated and direct, and will throw the light with such power into the mouth, that I sometimes do better with it than with the bright sunlight. There is one objection to it which has not been overcome, and I do not know that it can be. It gives some heat. This is ten-candle power; I think mine is eight-candle power, and it gets pretty warm; not so much but that you can touch it, but in hot weather it is a little unpleasant. It is rather glaring to the eyes of the patient, and I have not had time to have a little hood fixed so it will shield the eyes of the patient. With the mouth-mirror for reflecting the light and with this for concentrating and intensifying it, it is a very good thing.

Dr. J. F. P. HODSON. Would it not be a good thing, in order to get rid of that heat, to have a little hood in between there,—a sort of second hood?

Dr. PERRY. That is a very good idea. I think a second hood would be just right scientifically. It had not occurred to me. Patients who shrink from it, or are a little worried by the light, put a handkerchief around their eyes, or close the eyes, and then there is no trouble.

Dr. M. L. RHEIN. In regard to the patient's eyes, a method that I use very successfully is to have them wear a pair of dark glasses; that works very well.

Dr. PERRY. Yes, except that I am nervous if patients keep glasses on when I operate. I feel freer when they take them off.

Dr. JARVIE. Dr. Palmer spoke of a device that he employs.

Dr. DELOS PALMER. Just a light isinglass which barbers use. Also a little shield which is not in the way of the operator at all.

Dr. PERRY. I have devised a little Right-angle Mechanical Mallet, which I have used for quite a while, and which I desire to exhibit this evening. It is on the principle of the Bonwill mechanical mallet. It is made to slip on the ordinary hand-piece. Attached to a spindle of the size of an ordinary bur wire is a wheel with a lug on it, and every time it comes around there it strikes a blow. It is not a hard blow, but it is effective. If we use large lumps of gold, there is no condensing force so effective as the lead mallet. Our friend here just said there was nothing like the lead mallet for packing gold, but Dr. Shumway demonstrated to us that cohesive gold in small quantities could be made cohesive and solid with a light tap or rub of an ivory instrument; in fact, that it was only necessary to bring the surfaces together and they would cohere. This mallet does not condense very deeply, but it condenses with great accuracy as far as it reaches. It brings the little portions of gold together and makes perfectly beautiful work.

It cannot strike a hard blow, because the diameter of the wheel is too small; but if Dr. Shumway could pack gold, as we know he did, thoroughly well by touching it with the ivory points, I cannot see why a little instrument like this should not pack well, if we can be content to drive it slowly and not try to pack too many thicknesses at once. In the posterior portions of the mouth, it is difficult and tiresome on the hand, and vexatious in many ways, to work from the back forward and get the necessary condensation. I have found that touching the gold just drives it into place, and if you will be content to use small pieces I am certain you can get a satisfactory result. Just how useful it will be and how far it will go I do not know. That can only be told by trial. The plugger points are held in place by a spring controlled by the thumb-nail. The straight ones revolve; the curved or foot-shaped are held in place by a slot cut on the side so they cannot revolve.

Dr. JARVIE. You cannot vary the force,—only one blow?

Dr. PERRY. I have never found any trouble with that. I set it so I can get a certain strength of blow, but I do not always use the blow up to that strength. You cannot regulate it automatically, but you can make it as gentle as you please by holding it. You cannot go beyond a certain strength. But see how much more it will do than the ivory points that Dr. Shumway used, if you choose to use cohesive gold! If you want to use semi-soft cylinders, you can do so to some extent.

Dr. J. I. HART. Could that be constructed to put on a slip-joint which would make the handle shorter?

Dr. PERRY. Yes; I have one like that. The one that is being passed around is used on a pulley-head. The points should be of different lengths, of course. You would be surprised to see what you can do on the grinding surface, and how useful it is in turning the force toward the front of the mouth. That point is not tempered or serrated; it is only a little pattern I made with my own hands.

Dr. B. C. NASH. Will these be on the market?

Dr. PERRY. Yes.

Dr. S. G. PERRY then read the paper of the evening, entitled "Some Thoughts on the Packing of Gold."\*

### *Discussion.*

Dr. PERRY. Dr. Maynard's son is here, and I would like to ask him if it is true that Dr. Maynard always used soft gold, and never cohesive gold.

Dr. J. D. MAYNARD. Quite right, doctor.

Dr. PERRY. Am I right in saying that he never used the rubber dam?

Dr. MAYNARD. Quite right.

Dr. PERRY. I think he said to me, with a little petulance in his manner, "I would not use the nasty thing."

Here are some plugger points. All of them, excepting the diamond-pointed, are made with absolutely flat ends with fine serrations, some with delicate points, and some with strong points where you want to use force and power from the elbow. Certain of these instruments I would like to have you study a little. I ought to have found time to show them separately, with casts and with matrices adjusted to show their special uses. They are so made that the greatest pressure comes always along the margin of the enamel or against the matrix, and made not in pairs exactly, but in opposites,—those that work toward you and those that work on the opposite side,—one pair on the posterior surface of the first molar and on the anterior surface of the second molar. Every instrument comes out well to the edge of the enamel. What folly it is to try to pack with the round instrument! It does not come to the edge; it is as unphilosophical and unscientific as it can be. But this is a point that comes along the gingival margin of the enamel so it impinges at the outer edge, and is flat and square at the side, and will condense with very little effort absolutely correctly as you go, so you do not have so much to do in the way of finishing. I wish you could all get the pleasure out of these instruments that I have gotten for quite a number of years. I have never shown them, although I have spoken of them many times. I will pass them around so you can see them. Please look at the ends, which are triangular [illustrating].

Dr. A. L. NORTHROP. Dr. Perry's paper is so excellent and complete that I do not like to make any remarks after hearing it. I think it is filled with interest. Dr. Perry is a very close operator and a good writer. His description of filling a tooth, if accurately

---

\*Printed in full in the DENTAL COSMOS for November, 1901, p. 1241.



followed, will result in as near a scientific operation as any we get. But, Mr. President, at the present time, taking the dentists that are in this room, you will scarcely find one who uses soft gold exclusively. I doubt whether one here uses cohesive gold exclusively. Almost all use them in combination.

Now we leave Dr. Perry and go back to our friend Dr. Corydon Palmer, and with his lead mallet in his hand and those sharp instruments, serrated as none would serrate them except himself, a better operation never came than from his hands. His boys to-day cannot beat him.

Now, what shall we say about packing gold? Dr. Perry sums it up in a nutshell: Make an accurate filling; calk the cavity tight. Do not call upon me to discuss such a paper as that; it is too good.

The PRESIDENT. With a great deal of pleasure, I want to call upon Dr. Corydon Palmer. He is not only an old friend of this society, but an old and very dear friend of mine. You all know what he has done for dentistry.

Dr. CORYDON PALMER. I must say that I feel greatly gratified to be here with old friends. Many of you I recognize, and I look upon New York really as my home, although I live in Ohio. Unfortunately, I do not hear as well as I used to, and I could not hear Dr. Perry's reading distinctly enough to follow; but from what I gather the subject of the paper is in reference to the different modes of introducing gold, and different qualities of gold, and I must say that I have been carried away back. Beginning in 1839, without tuition, I made my own instruments and conducted my own experiments. My first real knowledge of anything was through a friend who came from Philadelphia. He had been a student of William Berkley. John and William Berkley were the notable practitioners just at that time. He would introduce a gold filling between the incisors, just passing a file through. I have always felt certain that he understood the use of the cohesive property of the gold, for he would not allow any one to handle his gold; and he said to me,—I was a boy then, "Corydon, my son, I have some gold of which I can lay two sheets together, between paper, and pass my hand over it, and you cannot separate it." I said, "How can I get some gold to try to fill teeth with?" He said, "If you want the best gold in the world, Abbey, of Philadelphia, makes it." I sent to Mr. Abbey, the old gentleman, and I practiced the use of his gold, and it was all by hand pressure. To make an operation by hand force, you must have instruments that are stiff and will not give; I had mine of solid steel. I saw a couple of them on my son's table yesterday, such as I used to use. The force must be applied at the end and side in introducing the soft gold. The manner of introducing it in a molar, for instance, is the reverse of that of using cohesive gold. For instance, if you have an inferior molar crown cavity, you place a cylinder at one angle, then another piece at the other angle, then put another piece in the middle, and then the next piece, so that the center is kept in advance of the sides all the way until you reach the point of introducing the last piece; and then comes the condensing. I would recommend

carrying the gold firmly to the bottom, using both the side and point of instrument, and then to the sides as it goes along. And the instruments should have perfectly sharp, square angles, tapering toward the point, with a single serration in the point, making two nice points, not too deep.

Dr. PERRY. You spoke of the sheets of gold that were cohesive. When was that, in 1843?

Dr. PALMER. Before that.

Dr. PERRY. Then it antedated Dr. Arthur and the others?

Dr. PALMER. Yes. There were a few who knew about it. I can only speak of my own experience, and I must confine myself to a few remarks about operating on the incisors, for there is where I have tried to exert my finest skill. I have never used any sort of appliance, and no kind of a machine mallet whatsoever. I have always used the hand mallet, and I wish to encourage those of you who have not tried to use the hand mallet and the instrument in your own hands to do so. Be like an artist. Have a neat little, short, light instrument and take the mallet in your own hand, and do it nicely. If you have incisors with walls likely to be fractured, do not put a machine mallet on, and do not let any one mallet for you. Take the mallet in your own hand and graduate the stroke as it should be, so as to do it without hurting the labial wall, which is sometimes so thin as to be almost transparent. That is where I think the use of the hand mallet, held in your own hand, is to be encouraged. It is the finest thing you can do. I could hear a little of what Dr. Perry said about the different golds, and I must say there are some persons skillful enough to take cohesive gold and use it from beginning to end without mixing it up with soft gold and a lot of other things that I have heard recommended. You speak of soft gold. Do you mean gold that is semi-cohesive?

Dr. PERRY. I alluded in a general way to both non-cohesive and that which is slightly cohesive.

Dr. PALMER. Have some semi-cohesive gold that can be used in such cases as are liable to be fractured. For my own part, I am using that in preference to the very cohesive. The cohesive would hurt the surface.

Dr. JARVIE. It is rather a novelty to hear a paper read upon this subject nowadays. I presume that among the different gentlemen in the room quite a variety of methods of packing gold in cavities are employed, and perhaps the results with all are equally good. One of my preceptors was Dr. W. W. Codman, of Boston, an old-school dentist, who never used cohesive foil, and used smooth instruments. Instead of the diamond-pointed pluggers, his were of the same general shape, but were round instead of having square edges. Later I associated myself with Dr. A. A. Wheeler, of Brooklyn, who was a disciple of Dr. Atkinson. His method of introducing gold was quite the opposite of Dr. Codman's. At the time of which I speak—viz, 1863-65—cohesive gold was the rage, and the efforts seemed to be toward a consolidation of the mass of the filling rather than careful adaptation to the walls of the cavity. The result was disastrous in a great number of cases. Dr. Perry

has told us of these solidly built masses of gold around which you could soon place an instrument at the cervical margins, and it was true of a great number of the very large masses of gold that were inserted in the teeth at that time. And my own experience was meeting with many failures at the cervical walls, particularly in approximal cavities in the bicuspid teeth. Later on I saw a number of fillings from the hands of Dr. R. M. Streeter, at one time a member of this society. I had occasion to remove one of them so as to reach the pulp-chamber, and found, to my surprise, that it was of non-cohesive foil. The filling was not only perfect in its adaptation, but it was beautiful to look at; and for a long time that filling was my standard of excellence. I now make comparatively few fillings of all non-cohesive or all cohesive foil, but almost all are a combination of the two. I think I get better results in this way than I can in any other. As I said at the beginning, I have no doubt there are others that get as good results or better by some different method.

As Dr. Perry said in his paper, to-day we seek to restore the original contour of the tooth, and in the great majority of cases that can only be done by the use of cohesive foil, with moderately small pieces, each piece being welded into its place perfectly before the next piece is placed into position. In regard to the force employed,—the hand pressure, the hand mallet, the electric mallet, the mechanical mallet, with the straight shaft or, as we have seen to-night, the right-angle mallet attachment,—every one of those forces can be beneficially employed, and oftentimes in the same filling; and a man to be thoroughly equipped and up to date must be pretty apt in the use of these various forces.

We must not lose sight of the fact that operators of a past period, mentioned by Dr. Perry, were unusually intelligent and able men. They made the reputation of American dentistry throughout the world, and we must not criticize their methods by our present knowledge. They were leaders in thought and work, and were they of us to-day they would lead in the use of the most modern methods and appliances, as they did in their time.

Dr. DWIGHT TRACY. I hardly think I am in tune with the present methods of dental practice, as I have been out of practice since 1860. Before that time it was my custom to use soft gold,—Abbey's foil. At that time we knew nothing about adhesive foil or cohesive foil. The method which I had adopted, and which I found very satisfactory, was to use cylinders, as has been suggested, but my method of putting them in was somewhat different. I condensed the cylinders as they were put in. For instance, I would insert a cylinder in the cavity, condense it by pressing it against the farthest wall of the cavity, then introduce another cylinder and condense that against the first, and so on until the cavity was nearly full; then I would press the last cylinder against the near wall this way [illustrating], so the walls of the cavity would be protected by the gold, and finish the filling in the gold with a strip of foil. In that way you can condense the filling and make a perfect fit without any danger of doing damage to the margin of the cavity, which I



think is one of the most common causes of the failure of fillings. With a filling put in in that way, you can file it off and polish it with comparatively no surface condensation. In my experience, there was more danger in doing damage to the margin of the cavity in condensing the filling than from almost any other source; that is, that the greatest source of danger in condensing was the breaking down of the edge of the cavity. While it would probably not show at the time, the fragments would loosen and decay set in.

In regard to the objection which Dr. Perry suggested that might be urged against fillings put in in that way,—that they were not as solid at the bottom as at the surface,—it does not seem to me to apply, because if the filling makes a perfect stopping and prevents the liquid from getting in, as long as the filling is solid enough to prevent its changing, that is all that is required in order to preserve the tooth. In my day there were no cylinders manufactured. We had to make our own, and my plan was to take half a dozen sheets of foil, fold them, and roll them around a very fine Swiss broach, making a long cylinder; and with a very sharp knife I would cut that into lengths to suit my cavities. In that way you could fill the tooth from bottom to the surface without packing anything in the bottom to begin with. You would make your cylinders the right length and have your plugging instrument of sufficient length to reach from the bottom of the cavity to the end of the cylinder, and it would pack squarely against the side of the cavity. In that way you get a perfectly solid filling, a perfect fit to the contour of the cavity, and without any danger of breaking down the margins of the cavity. It is much quicker than to adopt the plan of just setting the cylinders in, making holes, and wedging until you get a solid filling. The time expended in making a filling of that kind was nominal in comparison with the other. You could make one in little time,—one that was perfect in its calking capacities, as has been expressed, and the surface would be sufficiently hard to resist the effects of mastication and make a beautiful soft finish.

Dr. JOHN I. HART. I would like to ask Dr. Perry if in his practice in the use of non-cohesive gold he has found use for ropes or extended cylinders rather than pack individual cylinders into the cavity,—speaking entirely of the use of non-cohesive cylinders.

Dr. PERRY. In the early days, almost entirely; but not in the latter days, since we have such nice cylinders.

Dr. HART. The ropes come prepared by the dealers in as nice form as the cylinders.

Dr. PERRY. It is a very quick way, too. Dr. Palmer illustrated it with his handkerchief. That was how I was taught to fill teeth,—get it in as quickly as possible.

Adjournment.

W. J. TURNER, M.D., D.D.S.,  
*Editor New York Odontological Society.*

## PENNSYLVANIA STATE DENTAL SOCIETY.

(Continued from page 1436.)

THE following discussion ensued upon the reading of the paper by Dr. MORRIS I. SCHAMBERG, entitled "A Statistical Study of Local Anesthesia in Dentistry."\*

*Discussion.*

Dr. GEO. W. KLUMP. I very rarely use hypodermic injections of local anesthetics. They have never proved very satisfactory with me; there is always more or less pain following and more or less pain in the introduction of the anesthetic. I used local anesthesia at one time in my practice, but none of the local anesthetics have ever come up to my expectations entirely, although I believe I never had any bad results. I have known of numerous cases of bad results following the injection of local anesthetics. I know of two or three cases in our own city in which, although they did not entirely succumb, physicians worked on the patients for a day or two afterward.

The paper is a very good one, as well as the method of obtaining statistics. I think this paper is in the right direction, and probably will give us good results in the end by investigating the matter in that way.

Dr. ROBERT HUEY. I want to thank Dr. Schamberg for the painstaking paper he has given us, and when we are able to read the report we will get very valuable information from it. He has given us conclusions which are interesting.

Living in a large city as I do, I am not compelled to administer local anesthetics, because we have a most admirable man who does that wretched part of the work for us when needed. But, like every one else, I occasionally have to remove a root, and I find that for that sort of work hypodermic injections of cocain, modified by other drugs, as nitroglycerin or atropin, work very satisfactorily. I never had any untoward results that I know of, and for such operations it has been satisfactory to me and the patients, who otherwise would have had to undergo suffering. We all know how, under the rapid manipulation required under nitrous oxid anesthesia, there is necessarily a great deal of laceration. By the hypodermic method, where the removal can easily be made without laceration, the gums and parts heal much more readily.

As to the colleges not satisfactorily teaching the hypodermic method of inducing local anesthesia, I would say that as a member of the State Examining Board that branch has fallen to my charge, and I get no answers on any subject that are as full and complete and satisfactory both in theory and in detail as the answers to the questions I have asked on the hypodermic method of inducing local anesthesia. It is delightful to an examiner to get a good answer, and sometimes an answer to that question lights up a whole paper. Nearly always the candidates go into detail more fully in answering that question than any other, nearly always giving me very

---

\*Printed at page 22 of the present issue of the DENTAL COSMOS.

fully the methods of preventing irritation, telling how the syringe should be held and the fluid forced out so that all air should be ejected from the syringe before application, etc. Some of the answers have been a delight to me, and I hope Dr. Schamberg will modify his ideas on that subject.

Dr. H. NEWTON YOUNG. In regard to local anesthesia in general, some years ago a gentleman passed through our section introducing a local anesthetic, and some of us bought the right for the use of it; and at that time, and I think since then, we have always had as good, if not better, results from the use of it than from any of the cocain preparations. It contained chloral, carbolic acid, and water. We had several demonstrations at that time, and his extractions, as well as our own since, have shown that it is as valuable as any of the cocain preparations. The Sunday before last I had occasion to extract a tooth for one of our practitioners there. The tooth was quite loose, although highly inflamed, and he wanted to know if I would inject some local anesthetic. I used one of the others. After injecting two syringefuls, he insisted upon my taking from the bottle I had, and I injected two more, all of which were supposed to contain cocain. After extracting the tooth, he said it hurt like everything, but probably did a little good.

Dr. DONNALLY. The paper is an excellent one, and I believe in the essayist's method of gathering statistics. I think there is one point of danger to which attention might be called, and that is where cocain is used to excess; I think that is a very great mistake. I think from my own experience and the experience of others, and particularly from the experience of the Emergency Hospital, where persons are frequently treated for the results of local anesthesia in cases in which one of the ingredients has been cocain, I have known cases where application to the mouth caused intoxication which lasted for several hours.

There is another point: I don't think any one who claims to be a professional man should use any anesthetic of which he does not know the ingredients and also the antidotes for them.

Dr. W. J. ROE. I wish to say a word of encouragement to Dr. Schamberg for the work done. I think it should meet with the approval of this society, and should be encouraged; it is a very important subject.

I have had considerable experience with local anesthetics, both from the standpoint of a practicing dentist and that of a practicing physician. In the last three years I can recall being summoned to see two patients,—one in a drug-store at Twelfth and Chestnut streets, Philadelphia. The patient had been in a dental parlor on Chestnut street, and had become completely prostrated after leaving there. He was helped into the drug-store, and when I saw him he was showing very alarming symptoms of cocain poisoning. The cocain had been used, I was informed, by local injection in the gum for the extraction of teeth. After treating the patient, giving him large doses of strychnin and digitalis, the circulation was strengthened, and after three hours' rest the patient was able to go home.



In the other instance I was called to the office of a dentist in Spruce street and found a lady in the same condition. This dentist had also used cocain by injection. After using the same treatment, the patient was removed to her home four hours later. Neither case threatened a fatal termination, although the symptoms were very alarming. I have seen in surgery similar cases.

Since the discovery of eucain B by Silex, in 1897, it has largely supplanted the use of cocain in my experience, as its toxic effects are very slight, and it can be employed in liberal quantities. During the last three years, it has been very rare to see cocain used. I believe as good results can be obtained from the injection of eucain, and it can be sterilized by boiling immediately before using. If the same procedure is followed with cocain it alters its chemical composition and its value as an anesthetic.

With respect to obtaining anesthesia by injection or infiltration of the tissues, Schleich, in the study of the sensitivity of the tissues to infiltration by different solutions, found that the nearer the solution approached the composition of plain water the greater was the pain incurred by its introduction, and that a solution of the same specific gravity, of the normal concentration and alkalinity of the body fluids, and of the temperature of the body did not cause pain when introduced and produced the least traumatism of the tissues, and that from it the tissues recovered most quickly.

My attention was called to this by a paper written by Rudolph Matas, professor of surgery in Tulane University, New Orleans. From his valuable experience in this line, he found that the same results can be obtained by using a solution which varies from six-tenths of one per cent. to two per cent.

Dr. SCHAMBERG. I wish to thank the members of the society for entering into the discussion of the paper. This presentation by no means covers the subject of local anesthesia exhaustively. I might say, without desiring to appear egotistic, that most of the points brought out in the discussion suggested themselves to my mind during the preparation of the paper, but I did not feel justified, in a statistical report of this character, in taking up your time with their consideration.

With due deference to the opinion of Dr. Huey, I hold that the incompleteness of the literature and the insufficiency of the teaching upon the subject of local anesthesia must necessarily be reflected in the examination answers of State Board candidates. It is through no fault of the dental schools that the men answer up as well as they do. What information they possess upon this subject is acquired through personal interest in it or through the necessity of being well informed upon it before facing this important tribunal. Furthermore, the theoretical knowledge as taught by a few of the dental schools is of little value without supplementary practical training in the use of local anesthetics.

I do not advise the indiscriminate use of local anesthesia in dentistry. I think unless a man is well able to meet any of the symptoms that may arise he should not undertake its use. If he be timid, the anesthesia will be necessarily unsatisfactory. If he be

too bold, disquieting, or even alarming, symptoms may be produced. It is not the use, but the abuse, of local anesthetics that gives the results we hear so much about.

Local anesthetics are extensively used by irregular practitioners and quacks, a fact which has militated against the reputation of the method. At the same time the popularity of local anesthesia with the *clientèle* of these individuals is conclusive proof that it has some virtue. If local anesthetics can be used by the unscrupulous and incompetent practitioner with a fair degree of success, there is no reason why in the hands of an intelligent and scientific man it should not be used to a greater advantage.

The meeting then adjourned to meet at 8.30 P.M.

### *Evening Session.*

The evening session was called to order at 8.55 by the president.

Dr. I. N. Broomell gave his lecture and exhibition on "Burs and Bur Shavings."\*

### *Discussion.*

Dr. ARTHUR. Mr. Chairman and gentlemen,—This subject has been presented in such a clean-cut way that I do not feel that there is any room for discussion, apart from the fact that the investigation is so original that few if any of us are acquainted with it. But I think the society is to be congratulated that we have one with us who can present this subject in this way. We are, of course, all interested in the matter, and it is one that we have had little or no conception of, except perhaps from the sense of touch. As to whether a bur is sharp or not, probably few of us can determine that by the sense of touch, unless it is very dull; and very often we are undecided as to whether we should throw a bur aside. Of course, we are not all prepared with instruments like this to make these examinations, but it would be interesting if we got no further than this, that the burs he has expressed a preference for are those that are the most efficient. The burs he has spoken most favorably of are those that I have felt an inclination to use. The oval bur, in my conception, is one the blades of which can be presented in such a way that it acts as Dr. Broomell has stated.

This subject is an important one in regard to the relief we give to the patient by applying the burs in the right direction to the cavity. By the illustrations, we see the effect of the burs when properly held and used; how to secure a smooth surface and avoid a rough one, and how to produce the least degree of sensibility in preparing a cavity. My curiosity was much excited as to what would be presented, and it has been fully satisfied in what I have seen here to-night.

Dr. HUEY. I have nothing to say except that all the experiments that I have ever made with cutting burs has been in following up the idea of Dr. Guilford, advanced in a paper written some years ago for the DENTAL COSMOS on Burs in Relation to Pain, and that is the point of the subject that interests our patients most. It has

---

\*Published in the December, 1901, issue of the DENTAL COSMOS, page 1357.

always seemed to me that an inverted cone bur gives the least pain, from the fact that I was cutting away from the pulp. You all know that in removing sensitive dentin with a sharp instrument cutting away from the pulp gives less pain than any other way, and it seemed to me that the inverted cone bur accomplished that better than any other; but my faith has been shaken in seeing the shavings which Dr. Broomell has placed on the screen. I shall experiment very fully with the oval bur, but heretofore my predilection has been almost entirely for the inverted cone burs for that reason.

Dr. BROOMELL. I will say, in reply to Dr. Huey's remark in reference to the inverted cone: There is no question about the cutting qualities of this bur. It is angular in outline, and will leave behind a cavity made up of angles rather than curves. That was the principal objection I urged against any angular bur, and that is the reason I suggest the use of the oval bur wherever it can be applied.

---

## TRI-STATE DENTAL MEETING OF THE OHIO, MICHIGAN, AND INDIANA DENTAL ASSOCIATIONS.

(Continued from vol. xliii, p. 1196.)

THE next paper was one by Dr. J. L. YOUNG, D.D.S., of Detroit, Mich., entitled

### SOME CONSIDERATIONS IN MODERN BRIDGE-WORK.

In presenting a paper on a subject that has received so much attention as bridge-work it is with the hope of bringing out clearly some disputed methods in this branch of our chosen profession, and if possible calling forth discussion that will tend to a better understanding of the same. While no set rules can be laid down to govern all cases, it would seem there should be certain well-founded principles to govern the technics of this work.

The question of bands (under the name of slipper crowns or open-faced caps) *versus* the porcelain-faced crown with cap and post for anchorage to the six anterior teeth is probably the most mooted of any. To say that it is impossible to properly anchor a bridge to the anterior teeth with bands does not make it so, but, with the aid of a few drawings, it is hoped to prove that such is the case. It must be conceded by all that a properly fitted band must pass under the free margin of the gum at least one-thirty-second of an inch, and at the same time conform accurately to the root at its upper margin, else irritation and recession of the soft tissues must surely follow.

As the canine is more often banded than any other tooth it will be taken for an example, for whatever objections apply to this tooth are applicable in a greater degree to the incisors. For all practical purposes, we have three forms of canines. Fig. 1 represents the short, thick variety; Fig. 2 a much longer tooth, and apparently



very easy to band, owing to the almost parallel sides; while Fig. 3 represents the beautifully shaped canine, with prominent contact

FIG. 1.



FIG. 1A.

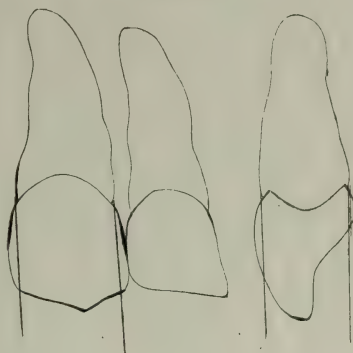


FIG. 2.



FIG. 2A.



FIG. 3.



FIG. 3A.



points and constricted neck, giving a splendid V-shaped interproximal space, which would allow a band to be used with safety to the

adjoining tooth. But this shaped tooth, more than all others, has been the stumblingblock to the knight of the open-faced cap. A glance at Fig. 3 is sufficient to convince any close observer that it becomes absolutely essential to remove the prominent approximal bulges in order that the gingival edge of the band may pass beneath the free margin of the gum and fit the neck of the tooth. This, of course, may be done, but the result is so unsightly that few would tolerate it. (Fig. 3A.) Regarding Fig. 1, it is readily seen that banding is impracticable, for, while the approximal bulges are less pronounced, the bulge of enamel just beneath the free margin of the gum, and which should be removed, is much greater, and thus necessitates the removal of a great deal of the approximal sides, giving a prepared tooth as shown in Fig. 1A. Besides, this bulge of enamel is found on both the lingual and labial just beneath the gum-margin, and proves a very serious obstacle on the labial, saying nothing of the unsightly shortened appearance given such a short tooth by the band of gold across this surface. A properly shaped seamless gold cap for such a tooth would be more artistic, and would be substantial. The advocates of bands will all agree that Fig. 2 can be successfully banded, as the approximal sides are so nearly parallel that very little cutting is required. But the interproximal space must not be forgotten. By looking at Fig. 2, it is seen that the V-shaped interproximal space has been lost in direct ratio to the approximal bulges, so that the thickness of the band, which should be at least 28 gauge, in such a space must necessarily prove a great menace to the adjoining tooth, as shown at Fig. 2A. And when a cavity develops, it is a very serious operation to properly fill it if the bridge is still in place.

Other grave objections to the use of bands are the liability to solution of cement and the tendency for the gold to stretch on the labial unless made so wide as to be very unsightly, for the great strain of the muscles of mastication should always be vividly before the successful bridge-worker. The one great argument in favor of bands is that by their use the tooth has not to be deprived of its pulp for the present. In some cases this may be of great value, as where a tooth has to be used for an abutment prior to the age when the apical foramen is thoroughly formed; but all such cases should be continually watched with the expectation that the pulp must be subsequently lost and the band replaced by a properly constructed crown. So whenever the patient has reached the age of twenty-five (and few bridges have to be inserted in the anterior region prior to that age), the loss of the pulp with the present appliances and knowledge of accomplishing this work will give far more satisfactory and permanent results than can possibly be obtained by relying on bands.

Another much-mooted question is the advisability of removing the pulp from all teeth to be fitted with gold caps; and strangely, too, this measure is often championed by the advocates of bands for the anterior teeth, for by the use of bands the pulps are left alive. Yet all will admit that to properly remove the pulp and fill the canals in a bicuspid or molar is much more difficult and un-

certain than in the six upper anterior teeth. But the question of extreme pain caused by properly shaping a tooth for a gold cap now presents itself in the majority of cases. So, of two evils, choose the least; and if the tooth cannot be properly shaped to receive a cap, by all means the pulp should be removed and the canals as thoroughly filled as possible. But the operator who says he can remove the pulp from any canal in any tooth and fill the same to the apical foramen is either a knave or a fool. Owing to the difficulties likely to be encountered in removing the pulps in the back teeth, it is advisable to preserve the life of healthy pulps and rely on local or general anesthesia to relieve sensation while properly shaping the teeth. For truly this intense pain is often the cause of the operator putting the engine away when he well knows the tooth is not properly shaped to receive a cap, and in every case a poor-fitting cap is the result, no matter how much time is spent in trying to adjust it in the mouth. On the other hand, to fit a cap on a properly shaped tooth is but the work of a minute.

FIG. 4.

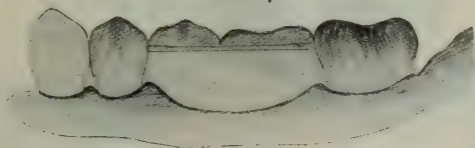
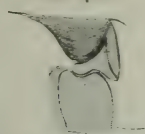


FIG. 4A.



Another question of considerable import is cleansable spaces *versus* saddles swaged to fit the soft tissues. No doubt the former are preferable where sufficient room can be left between the dummies and the soft tissues to insure permanent space, as in Fig. 4. In such a case there is no danger of the gums becoming hypertrophied or inflamed, as is often seen under the ordinary bridge, and especially if the teeth are short, as in Fig. 4A. In such a case a more cleanly permanent result would be obtained by covering the soft tissues beneath the dummies with a saddle of pure platinum, as any inflammation about the margins of the saddle will tend to act as a barrier to the entrance of particles of food. The same applies in a greater degree to single dummies placed between two abutments, for in all such cases, owing to the impossibility of properly brushing the gums in such pockets (unless a wide space can be left, as in Fig. 4), inflamed soft tissue is a certainty. In all porcelain restoration the saddle is of great value, as it materially strengthens the finished piece, and at the same time simplifies the work.

A method of porcelain restoration is shown in Fig. 5, where the absorption is so extensive as to require one-quarter inch of gum



above the incisor dummies to replace the lost tissue. This is accomplished by using Mason's detachable facings with iridio-platinum backings. The backings are soldered together with twenty per cent. platinum solder, by connecting the tubing from the blow-pipe to the nitrous oxid cylinder instead of to the foot bellows, soldering at an intense white heat. If all platinum bases for porcelain work were soldered in this way the results would be more gratifying. Platinum of 36 gauge is now swaged to cover all that portion to be replaced by porcelain gum, edge-turned or

FIG. 5.

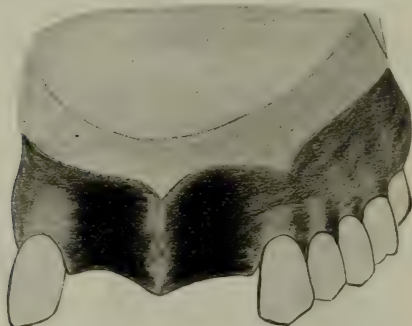
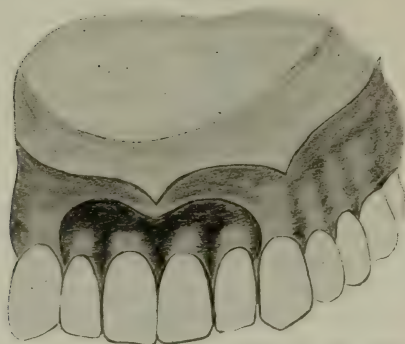


FIG. 5A.



wired, and then soldered to the backings. (Fig. 6.) Platinum of 28 gauge is now swaged to cover the lingual side of the backings and soldered on to stiffen the piece so that it will not change shape in the furnace while fusing on the porcelain. Close's body is now fused on and finished with gum enamel, allowing it to extend down between the necks of the teeth, giving a finished section when the facings are ground to fit. (Fig. 6A.) The canines are now excised, pulps removed, roots filled, and caps and posts fitted, and, with these in place on roots, a bite and impression in plaster is taken, removing the caps from the roots. Casts are now run in the usual way and mounted on the articulator. When the plaster has set the impression is removed and Mason facings, at least one shade darker

than the incisors, are mounted on the canine caps in the usual way. The incisor section is now waxed in place between the canines, the facings are all removed, and the bridge invested for final soldering. When set, the wax is boiled out and 20-k. solder flowed in to unite the incisor section to the canines, giving a finished piece, when the facings are fastened in place with chloro-percha, as shown in Fig. 5A, and one that can be easily repaired should a facing ever be broken.

With the hope of making this paper more interesting, an attempt will be made to minutely describe the construction of a bridge extending from the upper canine to the second molar on the same side. This particular case is selected, as its proper construction involves almost all the principles of porcelain-faced gold-backed bridge-work. If the outlines of the molar are complete, or can be restored by filling, take an impression in modeling compound in two halves, using a little tray made of a brass ferrule three-quarters of an inch in diameter, sawed in halves, to which has been previously soldered a small brass hinge, using soapstone to cause the

FIG. 6.

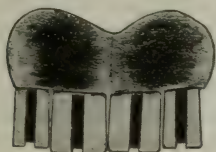
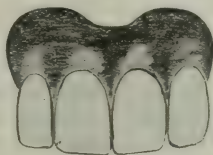


FIG. 6A.



compound to separate when cool. In this way a perfect impression can be got of any bell-shaped tooth. If the third molar is in place and properly knuckled against the tooth to be capped, a thin strip of German silver should be inserted between them and allowed to project one-eighth inch both buccally and lingually, and, after the impression is removed, this can be replaced in it so as to give a perfect reproduction of the tooth in plaster when run up. If the tooth is too badly broken down to be easily restored by filling to get this impression, it is advisable to take an impression and bite of the opposing teeth in plaster. In this are run plaster casts of both the upper and lower teeth, and when separated fresh plaster is added to the broken-down tooth, which is brought in contact with the opposing plaster teeth, these having been previously varnished to prevent sticking, and then it is allowed to set. This can readily be carved up into the desired shape from which to construct the gold cap. In either case the plaster should be removed rootwise one-sixteenth of an inch, and in doing this the sides should be kept parallel, for the outside of the gold cap will be the same size as the cast, and allowance must be made for the thickness of the gold at this point. A fusible metal impression of this plaster tooth is now obtained by using a modification of the Berry ring, which has three slots for cardboard instead of two. The object of this is to allow of the easy removal of the plaster tooth without fracture, as they often come handy again; and also the easy removal of the cap

in the course of swaging, which is often quite difficult in bell-shaped, sharp-cusped molars if the impression is left in two pieces. In this metallic impression, which should be oiled, can be swaged a seamless gold cap from a blank of 22-k. gold of 28 gauge previously drawn up with the Morrison plate, exactly reproducing the natural tooth. The cusps are filled in with a high-grade solder made of sixteen parts of clean 22-k. gold scrap and one part of Dr. Dorrance's solder alloy. The cap is ready to adjust when the tooth is properly ground down at the next sitting. A full seamless canine cap can be made in the same way when desired.

The next step is the very important and often very painful one of removing the enamel from the tooth, which in the majority of cases is essential if the cap is to be properly fitted. Cocain can be used to good advantage by means of the cataphoric appliance, and in many cases, after the dentin has been exposed in several places on the occlusal surface and the cocain applied in this way, the remaining enamel can be removed without causing any pain. A true knife-edged carborundum disk in the engine is very effective for this work, for the fewer dental tubuli ground at once the less pain is caused; so when a disk wears thick it should be put in the lathe and trimmed thin and true with a diamond tool. The occluding surface should be removed until at least one-thirty-second of an inch of space is left between it and the nearest point of the occluding teeth. With a properly shaped diamond disk kept wet, trim the approximal surfaces, slightly slanting toward the occlusal surface. With a small true carborundum, slant the buccal and lingual sides as the approximal ones. Now comes the hard part, especially if the third molar be in position,—to properly shape the disto-buccal and disto-lingual corners, and also to remove the bulge of enamel just beneath the gum-margin in the lingual and buccal surfaces. A diamond disk swaged saucer-shape is of great service in this work, as it is a rapid cutter when kept wet, and does not wear thick and injure the gums. Also, pointed cross-cut burs for both direct and right-angle hand-piece are indispensable. After once using these rapid cutters, the Case enamel cleavers and chisels will be entirely discarded for this work. With binding wire, take a measure well under the free margin of the gum, and if the tooth has been properly trimmed the wire loop can be easily removed without the aid of any instrument, as the circumference at the neck is greater than at any point between it and the occlusal surface. This important test should never be omitted.

The cap is now pressed on the tooth with the fingers, and the approach to the gum-margin and the occlusion are noted, the top of the cap is trimmed to conform with the gum line and to such an extent as to admit of proper occlusion, and is then beveled from without in, so as to readily pass between the free margin of the gum and neck of tooth at least one-thirty-second of an inch. When these precautions have been taken and the cap is forced on the tooth, the result is a perfect-fitting, accurately occluding and knuckling reproduction in gold, causing no irritation of the gum or other inconvenience. It is well to remember that if the patient com-



plains of the cap being too tight that it is too loose, and is causing pressure on the soft tissues,—for it is absolutely impossible to force a cap on so tight as to cause pain by its pressure on the tooth.

If the canine possesses a vital pulp and it is decided to use a Richmond crown, nick the tooth with a diamond disk on both lingual and labial sides on a line with the gum-margin on the mesial side, then adjust rubber dam and with excising forceps remove the crown, exposing the pulp. Having previously prepared the hypodermic syringe with a solution of cocain, immediately insert the needle into the pulp and at the same time force some of the solution into it. In this way the needle can be forced well up and the pulp be thoroughly benumbed with very little pain, as it has not yet recovered from the shock of excising the tooth. With a suitable Kerr broach, remove the pulp and control the hemorrhage which usually follows with twenty-five per cent. pyrozone; dry out with alcohol, and fill the root with a cone of gutta-percha which has been dipped in oil of eucalyptus, entirely filling the canal. In reaming out the canal for the post the gutta-percha acts as a guide, and lessens the danger of perforating the root.

On removing the dam, the root can be trimmed down by the use of saucer-shaped diamond disks and cross-cut burs, so as to be slightly cone-shaped; the measure of the root is taken, the wire removed and cut open so as to give the length to cut a band of platinum of 28 gauge. The width of this depends on the root, but one-eighth inch is usually sufficient. The ends should be beveled from opposite sides, so that when brought together they lap, and are then soldered together with pure gold. The band is then fitted to the root, using the same precaution as with the molar to have it conform to the neck and pass beneath the free margin of the gum. Remove the band and with a true carborundum wheel (the only place where a wheel should be used in this work) bevel the end of the root until the labial portion is slightly beneath the free margin of the gum, which can be easily done, as the rubber dam has pressed it back. Readjust the band and trim it flush with the end of the root. To this is soldered a piece of pure platinum of 30 gauge, forming the cap. The root is now reamed out, the cap adjusted on the root, and a hole punched with a sharp-pointed instrument to accommodate the post, which should be of iridio-platinum No. 13 gauge, with the end slightly tapered. This post is forced through the hole in the cap, and, as it turns an edge of metal around the post into the pulp-canal, it gives bearing enough to hold the post accurately in place while soldering without investing. Mark the post just below the cap with a sharp excavator on the labial aspect, remove the post, then the cap, and place both together in correct relative position, and solder with pure gold. At the same time flow a little pure gold over the labial side of the band, so in case it does show any it will present a golden color. Cut the post off to admit of proper occlusion when placed on the root, and still leave projection enough to be firmly grasped by the impression and removed by it.

The attachments are now placed on the abutments, and, if

properly constructed, should sit firm and yet be readily removed by the plaster impression, which should be of all the upper teeth. An impression of all the lower teeth is taken in "dento" or modeling compound, and plaster casts run in each impression. But previous to running the upper impression the canine attachment should be almost filled with Mason's "anti-flux" and a thin copper ferrule fitted inside of the molar cap, and held in place by packing in some soft wax. The object of this procedure will appear later. The canine root should now be covered with gutta-percha base plate to prevent the gum from falling over that part of the root cut off beneath the gum-margin. This is easily done by using a small tack covered with sufficient gutta-percha, previously warmed, to fill the pulp-canal and spread out over the end of the root under pressure of the finger. The rubber dam is now adjusted on the molar, which is coated with a saturated solution of silver nitrate until the dentin turns quite black, thus closing up the dental tubuli, rendering the tooth much less sensitive to thermal changes and the action of the phosphoric acid in the cement. The dam is then removed, and the patient instructed to rinse the mouth with a saturated solution of sodium chlorid to prevent the disagreeable metallic taste following the use of silver nitrate.

When the casts are separated, they are mounted on an anatomical articulator in the usual way. The canine attachment is now readily removed from the cast by opening through the plaster from the labial view to the end of the post and loosening with a suitable instrument. It now can be readjusted on the cast as often as desired in finishing the work, doing away with the necessity of a second impression. The gold cap can also be easily removed and readjusted, as the copper ferrule acts as a guide for it.

The post is now cut flush with the exposed surface of the cap, and the labial edge of the cap beveled as much as the thickness of metal will allow and replaced on the cast. A properly selected plate tooth is ground to fit, having it at least one-thirty-second of an inch shorter than the finished crown is to be. This facing should be beveled from very near the pins to the upper labial edge, and should have a short bevel at the point so as to allow the pure gold backing, of 32 gauge, to cover all but the labial and approximal aspects. Over this is fitted a backing of iridio-platinum of 28 gauge, allowing it to extend rootwise just enough to admit of holes to accommodate the pins and to extend one-thirty-second of an inch beyond the point of facing. The backings are now carefully removed, so as not to change the shape of the pure gold, and held in their relative positions with suitably shaped pliers; high-grade solder is then flowed into the V-shaped space between the backings, uniting them in one solid piece. If carefully done, this backing will accurately fit the facing when replaced, and be held tight by nicking the pins. This, when soldered in position on the cap, will give a tipped canine strong enough to withstand the great strain brought on this tooth, and yet it will not be unsightly. (Fig. 7.) The tipped facing is now waxed in place on the cap with sticky wax, and the occlusion carefully noted by working the jaws of the

articulator from side to side to be sure the tooth is not too long. And this is where the anatomical articulator is indispensable, and in order to get the best results with it an impression of all the teeth of both jaws is required. If the crown should be left too long, the metal tip must be eventually worn away by the lateral movement of the jaws in mastication, and fracture of the porcelain is liable to follow. This occurs oftener in the canines than in any of the other anterior teeth. The tooth and cap are now removed from cast, the facing coated with a paint (composed of yellow ochre four parts, boric acid one part, mixed with boiling water) to prevent the borax from checking the porcelain, and then invested, using just enough to hold the parts together. When hard, the wax is washed out with boiling water, and the two united with high-grade solder by heating the investment from underneath until the first piece of solder flows, thus forming a perfect union between the cap and backing on the tooth, with no danger of cracking the facing, which

FIG. 7.

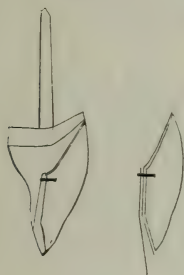


FIG. 8.



is caused by expansion of the pins if heated in advance of the labial view of the porcelain. When cold, it is removed from the investment, boiled in hydrochloric acid, which dissolves the borax, polished, and replaced on the cast.

Suitable porcelain facings are now selected for the dummy teeth, care being taken not to have them too long, and especially not too wide, as it is better to have a little space between the facings than to have to grind them or have them check in the final soldering, which is almost sure to occur if in absolute contact when the bridge is invested, owing to the contraction of the solder. As the same principles are involved in the construction of these it will be necessary to describe only one. Sufficient 22-k. gold is melted up, and while hot is placed in the desired impression (previously oiled to prevent sticking) in a cusp die plate, a large steel punch placed on it and the gold driven in with a heavy hammer. In case it should stick in the plate a sharp blow of a hammer on the reverse side of the plate, directly over the gold, will dislodge it without any injury to the plate. This being of solid gold (no solder), it can be cut and trimmed to give the exact occlusion required with no danger of change of shape in soldering. The labial side is now beveled, and the facing beveled to fit it, as shown in Fig. 8. The facing is now backed up with pure gold of 32 gauge, extending from the bevel



above the pins to the labial edge. Over this is placed a backing of platinum, of 30 gauge, from bevel to bevel, and the pins nicked to hold the two in place. The facing and gold cusps are now attached with wax in the desired position, the facing coated with ocher paint, invested and soldered with high-grade solder, using just enough to unite the two. When cool, remove from the investment and place on the articulator along with the other dummies, using just enough sticky wax to unite them all together. A piece of iridio-platinum wire of 13 gauge (which has been flattened by passing it through the rolls), exactly long enough to reach from the molar cap to the canine crown, is placed in position, and sticky wax is flowed around it to unite wire, dummies, and attachments all together. Care should be taken to allow none of the wax to get on the plaster cast, which would prevent the easy removal of the bridge. The bridge is now carefully removed from the cast, the facings coated with ocher paint, then the piece is invested and the wax washed out with boiling water, when it is ready for the final soldering without previous drying. Solder, composed of sixteen parts of 20-k. gold to one part Dorrance's solder alloy, is now flowed in by heating the investment from underneath till the first piece of solder flows, uniting the bar, dummies, and crowns in one solid piece. The object of the bar is to give strength to the finished piece, to aid the solder to flow from one dummy to another, and to prevent shortening of the piece by contraction of the solder. When cool, boil in muriatic acid, grind and polish, being careful to leave no pockets for the lodgment of food. It can now be returned to the cast in its proper position, and, if necessary, ground to articulate with the opposing teeth. When these precautions are taken, the finished piece is ready to cement in place without the necessity of grinding to articulate in the mouth.

The bridge is now tried on to see that all is right, and, if found so, is cemented in place. In doing this the abutments should be washed off with alcohol to cleanse and dry them, and should be kept as dry as possible by using absorbent cotton rolls or napkins, the gum coated with equal parts of aconite, iodine, and chloroform, which lessens the irritation of the phosphoric acid of the cement. The cement is mixed to the consistence of thick cream, a little placed in the canine root with a properly shaped piece of orange-wood, and sufficient placed in the caps to have some escape as the bridge is forced on with pressure and afterward tapped home with a mallet and driver. When the cement has set, the surplus should be removed from under the free margin of the gum, and syringed away with a strong warm solution of sanitol to further relieve the irritation. It is well to have the patient return in a few days to see that there has been no cement left beneath the gum-margin, which might cause irritation and recession of the same; and also to see that the occlusion is right, as many otherwise good bridges are ruined by malocclusion.

The writer has frequently been taken to task for cutting down sound teeth in order to fit attachments for a bridge, particularly where only one tooth is lost, as a lower first molar. Is it not better

to supply the lost organ, and in so doing forever protect the adjoining teeth from decay, than to allow the teeth to separate or tip over and interfere with proper occlusion, probably causing exostosis, or to insert a plate to cause irritation of the gums and abrade the adjoining teeth, to say nothing of the annoyance and discomfort? If bridge-work is good at all, it is in just such cases. It is the writer's opinion that a tooth properly capped is not liable to be troubled with decay if the pulp be alive, and if dead there is no better way of preserving the tooth.

The extent to which bridge-work may be employed depends very largely on the conditions of the supports and surrounding tissues. Where teeth are firmly set and the surrounding tissues healthy, the canines and second molars will successfully support a bridge of fourteen teeth. Where a bridge has but two attachments, it is well to have the intervening teeth as near the straight line as possible, and thus do away with lateral strain. The third molar can often be used to good advantage as an abutment, and, if well developed and firmly set, will successfully carry a span to the canine of the same side.

#### *Discussion:\**

Dr. N. S. HOFF, Ann Arbor, Mich. Dr. Young and I always disagree when we get on this subject of open-faced crowns. He does not believe in them at all, and I do. I believe in them, not because I think they are more durable and stable, as I have ceased making operations that are going to be *permanent*. I do not want you to think I am retrograding, because I am really making greater efforts to-day to get conservative results than ever before. But I find that the best we can do oftentimes fails.

I have been greatly disgusted at seeing large exposures of artificial material in the anterior part of the mouth,—large exposures not only of metallic substances, but of porcelain. I have been thoroughly disgusted with attempts to make abutments or attachments to bridges with large quantities of material, metallic or porcelain, as it may be. If you are ever so careful in the manufacture of a porcelain crown, or attachment, or abutment, it will change color in the soldering process; and I have sometimes thought their color changed even after they were set in place, although they seemed to harmonize perfectly with the teeth when first placed. At least they had not that translucent appearance which the natural teeth have. After the best we can do with them they are very often entirely out of harmony, so far as esthetic appearances are concerned. And so, although I feel very often that these open-faced crowns or attachments which we make are likely to produce conditions which will favor the destruction of the teeth, I do not hesitate to make them. The selection of patients for whom they are used ought to govern the adoption of these methods in every case. With some people,—I do not care what you put in their mouths,—with the best fillings you can make, fillings fail, and the teeth go all to pieces because

\*The discussion was opened by Dr. Stephen, of Cleveland, Ohio, but the transcript of his remarks was not furnished to the DENTAL COSMOS.—ED.



patients do not take proper hygienic care of the mouth; while in other people's mouths we may make what we consider very unpromising fillings, and yet they will preserve the teeth for a great many years, simply because the patients take proper sanitary care of the mouth itself. If I am called upon to swing a lateral incisor or a canine tooth, or even make an attachment for a bicuspid, as has been indicated by the essayist, in the mouth of a patient who has some appreciation of the necessity for keeping the mouth clean, I do not hesitate to put one of these open-faced crowns on his tooth. I have had such teeth as that in the mouth for several years, and I know of but one case where I have had a failure with an open-faced crown, and that was not the fault of the method of construction. The essayist says that the cement does not hold, and that an open-faced crown is so flimsy that it gives way by and by under the strain of mastication. I do not know how he makes them, but I make them strong enough not to give way; but in doing that it is not necessary that you should use material so thick nor so much of it as to expose it inconsiderately. These attachments can be made so that they cover the lingual and approximal surfaces of the teeth, and yet show but little on the labial surface. Of course, it is not possible to hide all of the material, but it is not necessary to do so. As the essayist has said, bevel properly and finish down as you finish an approximal filling, so as to prevent the accumulation of decomposing foodstuff about it and underneath it. If that is done, there is no reason in the world why they should not last for years.

When I have put such an appliance in the mouth, and used care in the selection of the patient, I do not feel as though I were jeopardizing the tooth of my patient at all. If by such an operation I can secure a useful and presentable substitute for only five or six years in the mouth of one who appreciates that service, I feel as though I have rendered a service to my patient and done the best thing under the circumstances. If it should afterward fail, I would resort to what I consider the more unfortunate expedient,—the making of an all-porcelain crown or an all-gold crown. I would only do that as a last resort. I would make these open-faced crowns first for esthetic purposes, and I would take the risk of their being sufficiently permanent to pay for the difficulty and trouble I would have in making them and adjusting them in the mouth, because they are more in harmony with the natural appearance of the mouth. It is possible not only to preserve the appearance of the teeth, but to overcome the necessity of greatly mutilating the teeth; and also to preserve the interproximal faces, so that it is possible for the patient to take proper care of the teeth.

Dr. C. V. VIGNES, of Louisiana. I believe it is our duty to make our work as durable as we can. I believe in the making of open-faced crowns only where the patient is so old that the number of years he has to live will correspond with the duration of the open-faced crowns. I have been practicing dentistry for about eleven years, and I find that these open-faced crowns that I made eight or nine years ago are coming back to me now, and I have to put Richmond crowns in their places. Like Dr. Hoff, I do not believe in



the placing of a gold crown in the anterior portion of the mouth. If I should do that in our part of the country, I should be run out of the place.

Now, as to the backing of the canine crowns, the method of shaping the porcelain is markedly at variance with my method. I believe that beveling should be produced with a wheel on that portion of the porcelain which is to come in contact with the backing. When we have done that, we can then back the tooth with pure gold of a very fine gauge and secure the adaptation at the gingival border by letting the backing project over and above the porcelain in that position. Now, in mounting the case, after placing on my backing I do not bend the pins, but, on the contrary, cut them as short as I can. I do not depend upon the length of the pin for the attachment of the backing to the porcelain, but I do bind the backing to the porcelain, after having placed it in position, with Dr. Parr's hard wax flux; and you will find that if you use thin gold—and there is no necessity to use thick gold—you will have the backing held in position in a very nice manner. After I have gone that far, instead of carving the tooth to produce the shape I want, I take gold-and-platinum foil No. 60—I use color No. 3 in preference—and box in, as it were, the mesial and distal surfaces of the tooth; and invest the tooth with this boxing in plaster and marble-dust or Teague's compound, which I find to be a very good investment material. After I have done that I melt out the wax and fill the matrix with solder, and produce the crown almost completed and ready for the mouth. In the application of this principle to the making of the bicuspid I shape my porcelain in the same manner, backing it as I want it, carve out the cusp in wax,—using the same gold that I used in the other instance, No. 60 gold-and-platinum foil,—burnishing it (and you can do so very readily, because it is not very resistant) to the surfaces of the carved wax, leaving exposed the lingual surface where that surface is long enough to permit it. You will find instances where the cusp will almost invest the band lingually. In those cases you can invest the tooth so as to leave exposed either the mesial or distal surface. Melt out the wax, and fill the matrix thus formed with solder. I have used 22-k. solder and have never melted the very thin gold and platinum used to form the matrix. The method is very simple; much more so than the work I have seen here.

I claim no originality in using the gold-and-platinum foil. I have only applied to crown-work the principles of making cast metal fillings.

Dr. PRICE, Cleveland, Ohio. I take the position, in brief, that we should not sacrifice the pulp of the tooth unless it is necessary. In the first place my idea of the perfection of our work is to give the best service for the greatest length of time. When we excise a tooth and destroy the pulp we have certainly shortened the usefulness of that tooth. If we have a middle-aged or young patient, we have shortened the life of that tooth many years as compared with the life and service of that tooth if we could allow the patient to

use it for twenty years before the pulp was destroyed, even if it were then necessary to resort to this last measure.

I will first describe the method that I would use in restoring a canine of the third form, the typical bell-shaped tooth. Supposing the patient is between twenty and thirty. The color of that tooth will probably be three shades lighter than the shade of the same tooth when the patient reaches the age of sixty. Supposing we devitalize the tooth and make a perfect match in shade, and supposing our porcelain does not change its shade. By the time that patient is forty years of age that canine will not match the other teeth. So that if we wish to keep the correct shade of tooth in the patient's mouth we must change our color about every ten or fifteen years. We all know this to be true. Now, the natural tooth would change its color in harmony with the rest of the natural teeth, if we can keep that same face. Can we do it without mutilating at all this perfect tooth? Supposing the bicuspid is gone: my method is to make an iridio-platinum band or gold-and-platinum of half-round wire, to pass around the cervical margin underneath the free margin of the gum. A backing is swaged to fit perfectly the lingual surface of the canine, and this band is soldered at one side and passes around the neck of the tooth under the labial surface. In the backing of the bridge [illustrating] is a small countersunk hole, through which is passed the free end of the half-round band. After the bridge, on which is placed a taper nut, is put in, the taper nut is screwed up and the band drawn up as tightly as an hydraulic press would bring it. You can scarcely break it with all your strength. Draw it so tightly around the tooth that there is no movement. Of course, cement is used at the time to hold everything rigid, and you have an attachment that is just as rigid as if the tooth were cut off and a post put inside. I have many of them that have been on for five years, and they are very firm yet and giving perfect satisfaction. Where the margins of the gold backing come to the enamel, it is polished as carefully as any filling would be burnished, so there is a minimum of cement. Of course, it is burnished at the time the cement is set.

I have put those on canines, carrying a bridge to the molars, without having a particle of metal show on either the canine or the first molar, using the same principle on the molar. And I have put them on in two sections where the teeth stand leaning together, the first molar gone, and the second molar in such a position that you could not possibly put it on in one piece. In putting it in in two pieces I use some little nuts to fasten the whole together. After the nut is screwed tight you grind and polish it off until there is no sign of it.

Why is it so much better to leave that pulp alive? For the reason that there is no one of us, no matter how careful we may be, who can fill even fifty per cent. of root-canals perfectly. We have often heard it said that the devitalized tooth is certain to give trouble some time. That statement is simply the result of experience, and it is because we do not fill all roots perfectly. On Thursday morning, when I give a little demonstration of the X rays, I will show



you that not nearly fifty per cent. of the work of our best operators is anything like perfect. Unless a root is perfectly filled the pericemental membrane will be thickened and the process be absorbed at the apex of the root; and in examining a great number of supposed perfectly filled roots I did not find nearly fifty per cent. in which absorption was not going on at the apex of the root. It was taking place simply because the roots were not perfectly filled. For this reason, and for the reason that the natural tooth will perfectly match the other teeth in color, I claim we should be conservative about cutting off natural teeth and devitalizing them when some other method will do just as well.

Dr. YOUNG. I do not advocate all-gold crowns for canines. I simply said that in the short, thick variety of canines an all-gold cap, if properly made, exactly reproducing the natural tooth, is better than the best band that Dr. Hoff or any other man ever made. I should like some one to show me how to make one of those bands that is artistic.

Now, if there is any question that I think is of great importance in bridge-work, it is the question of properly attaching to the six anterior teeth. I was very much surprised at the assertion of Dr. Hoff that he did not expect his operations to be lasting. I think a man who is a teacher in one of the best universities in this wonderful country of ours ought to be ashamed to stand up before a body of young men and make an assertion of that kind. There is too much of that kind of work done. Dr. Hoff says if we can make them last four or five years we ought to be satisfied. There are a whole lot of people who are willing to have bridge-work done if they are certain it can be made substantial and lasting, and I do not think that the man lives who can make bands that are lasting and substantial.

A condition that is very frequently met with is a very short bite, and the opposing teeth probably elongated because the teeth have been out for some time. If you want to supply a masticating surface in that case, thus giving the patient something to chew on, you have got to get it so close to the ridge that it is impossible to keep it properly cleaned. When it is first put in, it can be washed, but after it is in there a year it cannot be washed, because the gum tissue becomes hypertrophied and crowds right down, and it is far more uncleanly than a properly made saddle. I have saddles that have been in the mouth several years, and there is no absorption of the tissue. If anything, the tissue is just a little bit inflamed around the margin of the saddle, which acts as a barrier to the entrance of particles of food, just the same as the flap of gum over the top of your gold cap acts to prevent the entrance of saliva to the cement around the gold cap.

In regard to the change of color in the teeth there is no doubt at all that a patient's teeth at the age of sixty, or fifty, or forty, have not the same color as at the age of twenty. But we can very easily overcome that by using a Mason's detachable tooth, which can be changed in fifteen minutes every year, if you wish, and get exactly the color that you want.



It is one objectionable feature in the banded canines, or any other banded teeth, that you do not get the color you had originally. I never saw a banded tooth yet where the band was on two years that the tooth was not markedly discolored, to say nothing about the unsightly shape that has been given it to properly fit the band. I think it would be very interesting to see any one make a band for a canine that would fit a normally shaped canine and last four years and be sightly. I should be satisfied if it lasted two years. Dr. Hoff says when this band fails it is always the patient's fault. I think it is the doctor's fault. He ought to be expert enough to pick out the patients who do not know enough to take care of a bridge. If they do not know enough, he had better put on something else or let them go without.

Dr. HOFF. That is exactly what I do. That is exactly the point I tried to make.

Dr. YOUNG. I think it was Dr. Price who made the assertion that fifty per cent. of our root fillings are imperfect. I believe that would be true of all of the teeth, but I do not think that can be said of the six upper anterior teeth. I think if a man carefully removes the pulp in the way I have described in my paper, and fills the root carefully, he will get a much greater percentage than fifty per cent. of perfect root fillings.

(To be continued.)

---

### PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

THE fifty-fifth annual meeting of the Pennsylvania Association of Dental Surgeons was held October 8, 1901.

The following officers were elected for the ensuing year: Dr. Wilbur F. Litch, president; Dr. Eben C. Flagg, vice-president; Dr. J. Clarence Salvas, secretary; Dr. Wm. H. Trueman, treasurer and librarian.

The Pennsylvania Association of Dental Surgeons was organized in Philadelphia December 16, 1845, and from that date to the present time has had a continuous existence. Dating back as it does to the early days, the dawn of organized effort for professional advancement, it is a connecting link between the past and the present. The society is one of the very few that have been sustained, and is the oldest dental society in the world. Notwithstanding the fact that the organization of other local societies drew from time to time many of its more active members, it has nevertheless continued to hold during this long period its regular stated meetings. The past year has been one of marked prosperity; there has been a large increase in membership, and the meetings have been well attended and have been made the medium for presenting papers of much practical usefulness to the profession, and hence having permanent value as contributions to current dental literature.

J. CLARENCE SALVAS, *Sec'y.*

## OHIO STATE DENTAL SOCIETY.

At the thirty-sixth annual meeting of the Ohio State Dental Society, held in Columbus, December 3, 4, and 5, 1901, the following officers were elected for the ensuing year: Otto Arnold, Columbus, president; J. B. Brauman, Columbus, vice-president; J. F. Stephan, Cleveland, second vice-president; S. D. Ruggles, Portsmouth, secretary; C. I. Keely, Hamilton, treasurer.

S. D. RUGGLES, *Secretary*.

---

DENTAL SOCIETY ANNOUNCEMENTS.

---

SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

A MEETING of the South Dakota State Board of Dental Examiners will be held at Madison, S. D., January 8, 1902. All candidates must appear not later than 9 A.M. of that day at the office of Dr. F. N. Palmer.

Practical demonstration will be required in every case, whether applicant holds diploma or not, and it will be necessary to bring complete operating outfit including filling materials and dental engine. Applicants, if found convenient, may bring their patients.

All temporary permits expire at this time, and parties holding the same must appear and obtain permanent licenses if they wish to continue in practice.

G. W. COLLINS, D.D.S., *Sec'y*,

Vermillion, S. D.

---

NEW YORK ODONTOLOGICAL SOCIETY.

THE thirty-fifth anniversary meeting of the New York Odontological Society will be held at the Academy of Medicine, 17 West Forty-third street, New York city, January 21, 1902.

For the afternoon meeting, which will begin at two o'clock, an interesting list of clinics has been arranged which will include the following: Dr. G. W. Schwartz, of Chicago: Making and setting a porcelain bridge. Dr. Geo. Evans, of New York: Demonstrating the use of gutta-percha cement for setting crowns and bridges, and exhibiting new instruments and appliances for its manipulation. Dr. Robert Good, of Chicago: Treating a case of pyorrhea and exhibiting case under treatment. Dr. Joseph Head, of Philadelphia: Demonstrating new method of bleaching and sterilizing stained enamel.

At this session also, Dr. Hinkins, of Chicago, will read a paper on "A Further Consideration of the Disintegration of Cements when used in and about the Teeth."

The evening meeting will take place in the large auditorium of the Academy of Medicine at eight o'clock.

The paper of the evening will be read by Dr. A. W. Harlan, of Chicago. Subject: "The Basis of Dental Medicine."

W. D. TRACY, *Cor. Sec'y*,

46 West 37th street, New York city, N. Y.

## DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE annual meeting of the Dental Society of the State of New York will be held at Albany, N. Y., Wednesday and Thursday, May 14 and 15, 1902.

W. A. WHITE, *Sec'y*,  
Phelps, N. Y.

J. I. HART, *President*.

---

## THE G. V. BLACK DENTAL CLUB.

THE G. V. Black Dental Club will hold its third public clinic in St. Paul on February 20, 21, and 22, 1902.

All dentists are cordially invited to attend.

J. M. WALLS, *Sec'y*.

---

## SOUTHERN BRANCH, NATIONAL DENTAL ASSOCIATION.

THE fifth annual meeting of the Southern Branch of the National Dental Association will be held at Atlanta, February 18, 1902. The association will be in session four days. Atlanta is now the best located and equipped city in the South for holding such a meeting. This fact assures a large attendance. The Southeastern Passenger Association will give a rate of one and one-third fare for the round trip. All members are earnestly requested to be present.

C. L. ALEXANDER, *Cor. Sec'y S. B. N. D. A.*,  
Charlotte, N. C.

---

## EDITORIAL.

---

### THE LEGACY OF 1901 TO 1902.

THE advent of a new year naturally prompts to a consideration of the results of the past year's accomplishment, which may serve as a basis of departure for the activities of the new one upon which we are just entering.

To those who have followed the course of events, the progress made offers substantial grounds for encouragement. The growth of professional sentiment in dentistry has been marked by numerous incidents which clearly indicate that the forces that are developing our professional structure are not only active, but are gradually placing dentistry in the position which by virtue of its intrinsic worth it is destined to occupy among the learned professions.

Since the establishment of the first dental college in 1839 the problem of dental education has been one of the burning questions pressing constantly for solution,—and properly so, for what a man knows and is able to do, that he is. The question of how to make a dentist is therefore paramount to all other considerations in the building up of the dental profession. The multiplicity of opinions



held with regard to the question has caused a corresponding lack of harmony in methods of practice and in regard to educational qualification among dental practitioners, and naturally tended to create dissensions and antagonisms in our ranks.

Primarily by the concerted action of our teaching bodies, through the work of the National Association of Dental Faculties, order is being evolved out of the educational chaos. Similarly, and as a powerful adjunct to the educational movement, the matter of state dental legislation has, under the fostering care and stimulus of the National Association of Dental Examiners, been progressing in two important fundamental particulars,—viz, a better state standard of qualification for practitioners and unification of state requirements. Both of these movements have had an educating effect upon the profession at large. The earnest and frequent discussion of these questions, both in associations and in our periodicals, has cultivated and brought about a better general understanding of their vital importance to professional status and well-being. The opponents of higher standards of both preliminary and professional education—those who believe that the dental college should open its doors to all applicants, regardless of their fitness to profit by a professional course—are now seldom heard from, for a realizing sense of the fact that modern dentistry requires for its successful practice a well-equipped mind, capable of receiving and utilizing the instruction now demanded in our work is everywhere manifest. Likewise those who in the early history of dental legislation regarded it as an infringement of their natural right to gain a livelihood now regard it as a reasonable and proper safeguard of their well-earned right to the exercise of a professional calling which has cost them much in study, labor, and capital to obtain. It is this clearing up of the professional atmosphere, resulting from a general appreciation of the beneficent work of the past year in both dental education and legislation, that should serve to encourage us to further endeavor along the same lines during the current year.

The activity noted has perhaps been no greater than during some previous years, but the results have been more noticeable. We have been, as it were, gathering the fruits of our labors. A notable example of the widespread interest felt in the problems of dental education was presented in the organization and work of the International Dental Federation, held in Cambridge, Eng., during August of 1901. Full reports of the deliberations of that body have appeared in this and other dental journals. Originating at

the World's Congress in Paris, the effect of that cosmopolitan movement will be felt wherever dentistry is taught throughout the civilized world, and the continued deliberations of the Federation cannot fail to do all that it is possible to do in promoting not only practical uniformity of educational standards, but universal harmony of sentiment and professional aim as well.

Another advancement is noticeable, one which we record with unusual pleasure: the better understanding of the meaning, spirit, and object of scientific work in dentistry manifested by the profession at large. Within quite recent years the mere mention of scientific as related to any department of dental work was sufficient to call forth criticism that it was "impractical," or "only theory." We hear less of the impracticality of scientific work in dentistry, for the reason that an appreciation of the true meaning of that term is becoming more general, and the champion of the practical is beginning to realize that the most practical man is he who knows the most about his life-business. Many of the papers which have been published during the past year bear evidence of the direct practical bearing of the scientific method of study upon the problems of dental practice.

A notable illustration of the practicality of the scientific method is furnished in the paper by Dr. Loup, of Paris, on "*The Rôle of Mercury in Mercurial Stomatitis*," one of the essays presented at the Third International Congress. The paper was based upon a research which developed the fact that mercurial stomatitis could be rapidly cured with irrigations of bichlorid of mercury,—a fact which should give much satisfaction to the followers of the Hahnemannian dogma were it not also shown that the stomatitis was in all cases due to local infection of the oral mucosa by pathogenic mouth-bacteria rendered possible by the vital depression of the tissues through the internal administration of mercury or its compounds. Here, then, by strictly scientific methods and reasoning, the practical result of a rational and sure method for treating so-called mercurial stomatitis by antiseptics has been evolved. And it was further shown that the name by which the disorder has been heretofore designated is a misnomer if our nomenclature is to be built upon the immediate cause of the disorder in question.

The total annual output of dental literature furnishes many other striking examples of the practical usefulness of scientific dental research. It is the policy of the DENTAL COSMOS to foster this tendency to the utmost extent of its influence and ability, but in the interpretation of that policy to exercise its discretionary power

to eliminate as far as possible that which is neither practical nor scientific, but pseudo-scientific or hypothetical,—to separate the scientific wheat from the chaff of speculation and ignorance, and to translate for the benefit of its audience of readers in all ranks of professional endeavor the best which our profession is doing for the professional common weal. We feel that our relation to the world's dental literature put forth during the past year justifies our belief that a solid gain has been made in professional progress.

The heritage of the year is fraught with promise of greater results to be achieved in the new one upon which we are now entering. We especially invite our readers to a careful consideration of the international movement toward the unification of dental standards as exemplified in the work of the Federation meeting, and a thoughtful study of the position which American dentistry is to take in that connection. Our professional national credit is staked upon the issue, and it cannot be thrust aside or ignored. The indications are strong that the position taken by Sir Michael Foster in his Cambridge address, the basis upon which our professional problem has been founded since our organized existence as a profession, will come to be universally recognized as the safest and best plan upon which to continue our future work. The time to enforce that idea is ripe, and it should become the immediate subject of our thought and effort for the future.

There is yet to be recorded one other achievement to the credit of the past year,—viz, the creation of our Army Dental Surgeons Corps, a result of many years' previous agitation the aim of which is now successfully achieved. With that precedent established, the creation of a similar service in connection with the navy should be readily accomplished; let us see to it that the present year shall witness the successful culmination of an effort to that end. For that and all other strivings for the betterment of our profession and the extension of its ministrations in the relief of human suffering or the increase of comfort and happiness, the DENTAL COSMOS again offers its facilities and pledges its best endeavors and support.

---

#### CORRECTION.

IN the report of the clinic on Pyorrhea by Dr. Robert Good, of Chicago, on page 1416 of the December issue of the DENTAL COSMOS, an error in transcription occurred by which "nitric acid" is referred as used in the treatment; it should read "*lactic acid*."



BIBLIOGRAPHICAL.

---

GORGAS: QUESTIONS AND ANSWERS. Embracing the Curriculum of the Dental Student, divided into Three Parts. By FERDINAND J. S. GORGAS, A.M., M.D., D.D.S., Author of "Dental Medicine," etc., Professor of the Principles of Dental Science, Oral Surgery, etc., in the University of Maryland, Dental Department, Baltimore. Published by P. Blakiston's Son & Co., Philadelphia. Octavo, 540 pages. Price, cloth, \$6.00 net.

We have frequently expressed our opinion of the class of works known as quiz compends. That they have a sphere of usefulness we do not deny; that their proper end may be abused, and is abused, we fully believe. They are useful as suggestive helps to the student and a godsend to examining boards, and there their usefulness ends. When used as text-books, their effect is pernicious, by bringing about an atrophy of thinking and reasoning power while overstimulating the memorizing faculty. If there is any natural endowment which it is the function of a college course to develop, it is the power to observe and reason. Memory is subservient to that major object. Education is not memory-cramming, and no compilation of questions with ready-made answers will develop the reasoning and independent thinking quality any more than pre-digested foods will make strong bodies. If the quiz compend can be confined to its proper sphere, let it stay, but when it is proposed to use it as a text-book, as several well-known teachers propose in the preface to this one, it is time to call a halt and revise our definition of education.

As a quiz compend Dr. Gorgas's book is colossal. Over five hundred pages of text are filled with questions and answers pertaining to the subjects of the dental curriculum, and, considering its scope and magnitude, the work is admirably done.

His definition of life, page 40, "The difference between an organized body capable of motion from a source within itself, and the same organism incapable of such motion," would hardly bear the test of a syllogistic rendering. That salivary calculus (page 73) may contain cartilage is new to us, and why pyrozone (page 75) should be preceded by the use of hydrogen peroxid we do not comprehend. Then, again, his definition of gravitation (page 77) is confusing when he says it is "the force by which every particle of matter in the universe is attracted to any other particle," and yet on

the same page he tells us that atoms are attracted by chemism and molecules by cohesion. The definitions of "liquor" and "aqua" (page 79) are arbitrary, and by no means generally accepted. The rule for naming binary compounds (page 81) is incomplete, as it takes no cognizance of the electro-polar relations of their constituents. The definition of monobasic acids (page 85) is totally incorrect; correctly defined, they are acids containing one atom of replaceable hydrogen. The question on tests for nitrogen (page 92) is answered very incompletely, and would convey but a vague meaning to the mind of a student.

These are a few points which in a rapid inspection of the work have suggested themselves as needing improvement.

PRINCIPLES AND PRACTICE OF OPERATIVE DENTISTRY. By JOHN SAYRE MARSHALL, M.D., Dental Surgeon U. S. Army, President Army Examining Board for Dental Surgeons. Philadelphia and London: J. B. Lippincott Company, 1901.

The author has included in this work not only the procedures usually classed under the designation operative dentistry, but the main features of dental embryology, histology, anatomy, and pathology as well. In its plan and arrangement of subjects that which is pursued in the "American Text-Book of Operative Dentistry" is closely followed, and much of the text is a restatement of that work. This similarity of treatment is notably evident in the chapters on Dental Anatomy, Examination of the Teeth and Mouth, Treatment of Caries, Hypersensitive Dentin, Classification of Cavities, Preparation of Cavities, Plastic Fillings, Inlays, Pulpless Teeth and Filling Pulp-Canals, and Dento-Alveolar Abscess. The chapter on Bleaching Teeth is practically a paraphrasing of the chapter on the same subject in the "American Text-Book," and the work throughout is mainly a compilation of data previously published. The compilation is well done it is true, and the author is to be commended not only for that, but for the care which he exercises in according credit for the sources of his matter; nevertheless it is a debatable question to what extent an author is justified in utilizing another's literary productions by simply restating the case and returning thanks for what he has taken.

By virtue of what it contains, the book should be valuable to practitioners as a work of reference, and for a similar purpose valuable to the student; but as a college text-book it is too bulky and elaborate, and includes too much that does not immediately

bear upon the subject of operative dentistry to be well adapted to that purpose. It only needs a chapter or two on oral surgery and prosthesis to bring it up to the magnitude of Garretson's work, which was fitted to a period in our history when dental practice was not specialized as at present.

The original features of the work are the author's own methods of practice, which are included in their appropriate chapters.

---

## OBITUARY.

---

### DR. CHARLES J. ESSIG.

DIED, at his residence, Wallingford, Delaware county, Pa., December 2, 1901, after a brief illness, from pneumonia, CHARLES JAMES ESSIG, M.D., D.D.S., in his sixty-first year.

Dr. Essig was born in Philadelphia, July 23, 1841. His first connection with the dental profession began September 10, 1857, upon his entering the laboratory of Dr. Wm. R. Hall, then located at Ninth and Arch streets, where he received his first instructions in prosthetic dentistry. Subsequently Dr. Hall transferred his laboratory to Dr. Essig, who for some years continued to do work for the leading dentists throughout the United States, and it may be said that his career as a teacher began at that time, as many young men received their training in mechanical dentistry from him while there.

After some years Dr. Essig gave up his laboratory, and in connection with the late Dr. Charles S. Jones entered into business relations with Dr. S. S. White, establishing a house of a similar kind in Baltimore, Md. This venture, however, was of short duration, and he returned to Philadelphia in 1869, and for a time reopened his laboratory. On January 5, 1870, he became associated with Dr. Louis Jack, with whom he continued in partnership until October, 1875, after the termination of which he retained his offices at 1533 Locust street until 1883, when he transferred his quarters to 1700 Locust street, where he remained in practice for nearly eighteen years.

In 1871 the degree of Doctor of Dental Surgery was conferred upon him by the Philadelphia Dental College, where he had been an instructor in prosthetic dentistry. This was the only honorary degree ever conferred by that school. Later he became Professor of Mechanical Dentistry and Metallurgy in the Pennsylvania College of Dental Surgery, and was for some years its dean.

Dr. Essig graduated from the Jefferson Medical School in 1876, having received an average of 100. In 1878 he was one of the organizers of the Odontological Society, and was its president for several terms.

About this time the provost and trustees of the University of Pennsylvania decided to organize a dental school in that institution. Accordingly the idea was placed before the faculty of the Pennsylvania College of Dental Surgery with a view of transferring that school, making it the dental department of the University of Pennsylvania. This suggestion, however, did not meet with the unanimous consent of the faculty, which was necessary before such



a change could be made in their charter. The desirability of the university affiliation, however, had so firmly impressed itself upon the minds of some members of the faculty that those who favored the plan resigned, and under the leadership of Dr. Essig, who was then dean, began the organization of the Department of Dentistry of the University of Pennsylvania. Associated with him were Prof. E. T. Darby, Prof. Geo. T. Barker, and Dr. Jas. Tyson, who was also a member of the medical faculty at the university. Dr. Barker was not destined to see the result of this new move, as he died before the organization of the new department was completed.

In February, 1878, the dental department of the University of Pennsylvania was organized, with Dr. C. J. Essig as secretary, and professor of mechanical dentistry and metallurgy; Dr. E. T. Darby, professor of operative dentistry; Dr. Jas. Tyson, professor of physiology; Dr. Jos. Leidy, professor of anatomy; Dr. H. C. Wood, professor of materia medica and therapeutics, and Dr. Theodore Wormley, professor of chemistry. The department began its educational work in the spring of the same year, with a class of fifty-eight students. It was from the first self-supporting, and has been since its organization one of the most prosperous departments of the university.

In 1882 Dr. Essig, finding the duties of dean required more time and attention than his practice would allow, resigned that position, still retaining his professorship until July 3, 1901, when he resigned the chair of prosthetic dentistry and metallurgy, thus severing his connection with the University of Pennsylvania, which had extended over a period of twenty-three years.

Dr. Essig inherited a taste for literary work from his father, and was during his professional career active in dental literature, making frequent contributions to the different magazines. His first publication, however, which appeared in book form was a treatise on "Dental Metallurgy," published in 1882. This volume has been translated into several languages, and is used as a text-book in this country and Europe, it being, at the time of its publication, the only work which treated of the metals and their special application in dentistry. This was followed in 1897 by the "American Text-book of Prosthetic Dentistry," a collaborative work of which he was the editor and to which he was a large contributor.

Dr. Essig was a representative man in his profession. As practitioner, teacher, and writer his activities covered one of the most important, not to say critical, periods of the growth of dentistry as a profession. His early training in his specialty of prosthesis was not only thorough in the ordinary sense, but in view of the state of the art and the methods then in vogue it involved a practical knowledge of materials used in prosthetic restorations, and the methods and appliances for effectively utilizing them, which was intimate and thorough, and which is not required nor taught at the present time. The compounding of porcelains and enamels, the carving of block teeth, the alloying, refining, and working of metals were subjects of which his early training, reinforced by a natural taste, made him master. But it was not alone the thoroughness of his knowledge of these matters that distinguished him, or that gave to his teaching both in his writings and in the lecture-room their distinctive value, but it was the strong artistic bent of his nature which was expressed in all of his work. He was essentially an artist by temperament; this quality was expressed in whatever he produced, and was the keynote in his teachings. He regarded dental prosthesis as a *fine* art, and so treated his work as to practically embody that idea. It would be

excessive to state that he exhausted the artistic possibilities of the materials at his disposal, but it is certainly true that each case that he undertook and finished represented his best effort at the time. When the introduction of the vulcanite base threatened to displace the higher grade of restorations on the metallic base, Dr. Essig was among the very earliest to experiment with vulcanite, to study its possibilities, and to so systematize its method of manipulation as to make it available for the production of artistic results and of practical utility. His attitude toward the misuse and slovenly treatment of the material was one of constant protest, and his teachings and example have done much to demonstrate its possibilities and rescue it from general condemnation. He kept alive the older artistic ideals in dental prosthesis and helped to inspire others with a respect for his specialty during the period of its decadence due to the wholesale and indiscriminate use of vulcanite, until the renaissance of prosthetic art by the introduction of modern crown- and bridge-work and porcelain restorations firmly re-established the artistic element in this important department.

His teaching was based upon practical experience. Thousands of those whom he has taught will be able to testify to the practicality and usefulness of the methods which he imparted to them, and to the inspiration to a higher artistic ideal in prosthetic work which his teachings conveyed. His death will bring a shock of surprise and sorrow not only to those who knew him personally, but to that still wider circle who looked upon him as a teacher and leader, an authority and sound guide in prosthetic work, and above all as a champion of that higher excellence in his department upon which alone its true professional relationship is built.

Dr. Essig was married in 1868 to Miss Mary Sturges, of Philadelphia. His widow and two sons, Dr. Norman S. Essig and Dr. George S. Essig, both of whom are practitioners of dentistry, survive him.

---

### DR. CHARLES C. BARKER.

DIED, November 30, 1901, at his home in Meriden, Conn., DR. CHARLES COFFIN BARKER, aged sixty-three years.

Born in Wakefield, N. H., where his father was a Congregational minister for many years, he studied dentistry with John Paul, M.D., of Dover, N. H., and in 1859-61 he was located in Bath, Me., afterward moving to Meriden, Conn., where he practiced for over thirty years. Dr. Barker all through his professional career held a deservedly high position among his fellow-practitioners, having been president of the Connecticut State Dental Association in 1893, of the Connecticut Valley Dental Society in 1895, vice-president of the Northeastern Dental Association and president of the Quonehtacut Dental Club as well as a former member of the American Dental Association.

Dr. Barker was a ready and forceful writer on dental as well as on other subjects, and being a man of wide culture he took a deep interest in literary and musical matters. A man of the highest ideals and the nicest sense of professional honor, his interests were ever for the uplifting and development of his profession, and his many friends will cherish the memory of this true man, whose honest, courageous, and upright character would have lent dignity to any calling.

His funeral was largely attended by representatives of the various dental societies to which he belonged.

## PERISCOPE.

**Coffee as an Antidote for Cocain Poisoning.**—Strong black coffee is a very good antidote for cocain poisoning.

**Sticking Stoppers.**—To prevent the annoyance of sticking stoppers in varnish bottles, coat them with glycerin or vaseline.

**Formula for Silver Solder.**—Coin silver, 24 grams; brass wire, 8 grams. Melt together and roll to proper thickness.—*Dominion Dental Journal*.

**Local Styptic.**—For hemorrhage from congested gums apply dry powdered suprarenal capsule directly to the tissue. It leaves no soreness.—*Dental Review*.

**To Prevent Counter Dies from Sticking.**—Coating the face of a Melotte metal die with vaseline will prevent the counter die from fusing with the die.—*Indiana Dental Journal*.

**Vulcanization of Large Prosthetic Pieces.**—Dr. Claude Martin vulcanizes large prosthetic pieces at a temperature of 311° F. for two hours and never has to record cases of porosity.

**Potassium Sulfate in Investing Materials.**—Plaster investments, with potassium sulfate added, stand high temperature with less cracking than investments without it.—*Dental Review*.

**Potassium Nitrate in the Treatment of Scurvy.**—In addition to most careful diet, of which excellent drinking water should form no small part, scurvy may be beneficially treated with potassium nitrate.—KEEN.

**To Lessen the Danger of Cracking Porcelain Facings.**—Coat the teeth with shellac. Under high temperature this forms a protecting film of carbon on the facing and lessens the danger of cracking.—*Dental Review*.

**Protargol**, a proteid compound containing 8.3 per cent. of silver, is an excellent remedy in all cases of suppuration. From ten to fifteen per cent. solution seems to act best. It does not stain like silver nitrate and it is not so caustic.—*Dental Review*.

**Drilling Glass or Porcelain.**—It is claimed that an ordinary drill, having its point moistened with a mixture of two parts oxalic acid and one part turpentine, will drill glass and porcelain. This mixture should be kept tightly corked.—*Dental Hints*.

**Care Necessary in Ligating Teeth.**—It is very necessary to be careful of the gingival margins when preparing a root for a crown. A ligature tied around the root of the tooth will lame the periodontal membrane for months and is liable to lame it for all time. The gingival margin does not run straight around the tooth, and if it is forced down to make room for a ligature the periodontal membrane will be so lamed that the tooth will not be used as it should be, but will be spared on account of the pain its proper use would occasion.—G. V. BLACK.



**A Singular Fatality.**—A little girl twelve years old met with a singular death at Brighton, England, recently. In biting an apple she broke a tooth, a splinter from which penetrated near the throat, setting up such profuse hemorrhage that the child succumbed.—*British Journal of Dental Science*.

**Shedding of Teeth as a "Tabetic Arthropathy."**—In locomotor ataxia the teeth may fall out gradually and painlessly. The joints, especially the knees and elbows, sometimes enlarge suddenly, as a rule without pain, constituting the so-called "tabetic arthropathies" of Charcot.—*Sajous' Annual*.

**Morbid Growths of the Palate.**—Dr. William F. Dudley, of Brooklyn, N. Y., reports (*Laryngoscope*, August, 1901) an unusual case of papillomatous growths of the soft palate in a man, aged seventy-one years. They were successfully removed with the wire snare.—*Amer. Journ. of the Med. Sciences*.

**Hematuria and Gingival Hemorrhage Treated with Turpentine.**—In a bad case of hematuria and bleeding from the gums, the gums were painted with turpentine and the oil given internally, with the result that blood ceased to flow from the gums and no longer appeared in the urine.—*Exchange*.

**To Prevent Sandpaper or Corundum Disks Catching the Rubber Dam.**—Keep a cake of toilet soap on the operating stand, and before using the disk run the edge once or twice over the dry soap; this will give a smooth edge which will glide over the dam without any trouble.—*Dental Office and Laboratory*.

**Rubber and Aluminum Plates.**—The rubber is dissolved in chloroform, and aluminum powder added until the solution takes a creamy consistence. After removing the wax from the flask the model is given two or three coatings of this solution and the flask is closed in the ordinary way.—*Archiv für Zahnheilkunde*.

**Prophylaxis Against Infection.**—If you are about to examine a septic case or one in which you suspect syphilis, wash your hands in vinegar or dilute acetic acid, and you will soon discover by the smarting any little scratches or abrasions in your skin which might become the starting-points of infection.—*Medical Sentinel*.

**Formula for Mouth-wash.—**

Tincturæ calendulæ, ʒjss;  
Acidi carbolicī, gr. xl;  
Aquæ, q. s. ad fiat ʒviij.

Sig.—Use as a mouth-wash.

**Fluid Extract of Geranium as a Hemostatic.**—According to the *Archives de Thérapeutique*, geranium in the form of the fluid extract is an excellent hemostatic. It can be used locally and internally in doses of four grams (about 64 grains). It contains tannic and gallic acids and gum, and is on this account an anti-hemophilic agent.

**Preparation of Steel for Regulating Appliances.**—After the steel appliance has been given the desired shape it should be steeped in zinc chlorid and then in pure molten tin. No oxidation will then take place; its tension is improved, and it can be united to any other metal by pure tin, using the zinc chlorid as a flux.—DR. GENESE, in *Ohio Dental Journal*.

**Creolin.**—The advantage of creolin is that it is quite inoffensive, both to man and animals. Its germicidal powers are ten times superior to those of carbolic acid. It is soluble in water, alcohol, and glycerin. It appears to have a peculiar calmative and curative effect on open wounds. It does not affect the skin nor corrode instruments.—*Exchange*.

**The Pneumococcus a Common Inhabitant of the Oral Cavity.**—One of the most virulent of all the common inhabitants of the mouth is the pneumococcus of Fraenkel, which, getting into the general circulation through the tonsils and other possible avenues of entry about the mouth, causes serious septic and inflammatory disturbances in widely distant regions.—*ROSWELL PARK*.

**Analogy of Sodium Dioxid to Hydrogen Dioxid.**—Sodium dioxid,  $\text{Na}_2\text{O}_2$ , is the chemical analogue of hydrogen dioxid, and like the latter is characterized by the readiness with which it parts with its atom of loosely combined oxygen under similar circumstances. The essential difference in its properties is the character of its by-product after its decomposition has taken place.—*E. C. KIRK*.

**Retarded Eruption of a Canine.**—Mr. Green showed before the Students' Society of the National Dental Hospital an interesting case of retarded eruption of a canine in the upper jaw of a man aged sixty. He was wearing a denture which the erupting canine had caused to rock. Only the top of the tooth was showing. Mr. Green extracted the canine, which was found much exostosed.—*British Journal of Dental Science*.

**Inadvisability of Rinsing the Mouth After Extractions.**—Dr. L. Brandt, in *Annales des Maladies de l'Oreille et du Larynx*, enlarges upon the disadvantages of rinsing the mouth after extractions. He says that it is not only useless but also injurious, as it facilitates hemorrhage and infection. He advises the packing of the alveolus with aseptic cotton. In this way, he says, hemostasis and antiseptics of the wound are assured.

**To Stop Decay Recurring at the Margins of the Gums or Around Fillings.**—Dry very carefully, then apply twenty-five per cent. pyrozone for about three minutes to thoroughly cleanse. Now apply formalin solution forty per cent. (full strength), continuing this for five minutes; then dry thoroughly and melt paraffin and salol over the surface, endeavoring to get the partly decalcified tooth-substance to take up the paraffin and salol.—*Items of Interest*.

**Injections of Colored Vaseline in Surgical Prosthesis.**—Dr. Delangre, of Tournac, has been using for nearly eighteen months injections of sterilized colored vaseline to raise depressed cicatrices and to fill up spaces formed by the loss of tissue brought about by operative or accidental traumatism. To obtain results altogether satisfactory, Dr. Delangre colors the vaseline with coral powder in order to give to the cicatrices the color of the skin.—*Semaine medicale*.

**Local Application for Toothache.**—The *Journal des Practiciens* gives the following formula:

R—Tincture of cochlearia,  
Tincture of mustard,  
Compound tincture of phyllanthus,  
Tincture of pellitory.                      equal parts.

—*New York Medical Journal*.

**For Offensive Breath.—**

R—Liquor sodæ chloratis, 3j;  
 Aquæ menthæ piperitæ, 3vj.

Sig.—To be used as a gargle.

**Prevention of Vomiting After Administration of Chloroform.**—Vomiting after the administration of chloroform may frequently be prevented by replacing the inhaler with a linen cloth steeped in vinegar, allowing it to remain over the face for some time.—*Cincinnati Lancet-Clinic*.

**How to Take Impressions of Mouths with Undercut Teeth.**—In taking impressions of mouths where teeth are undercut so much that a drag is likely to result, the following method answers perfectly: Syringe and cleanse the undercut tooth; mix some plaster of Paris thin, and fill up the undercut with it, allow the plaster to harden, and then trim up; smear the plaster with a little vaseline, then take the impression, and afterward remove the plaster from the undercut.—*Ohio Dental Journal*.

**Backing Teeth in the Making of Crowns or Dummies.**—In making crowns or dummies, it is better to back the tooth first, before any grinding is done, for the tooth is then stronger and the pins may be well riveted to the backing. If the backing is put on after the tooth has been ground, and the pins have been encroached on by the grinding wheel, a part of the tooth may be fractured when riveting the backing. This would not be the case if the backing is put on first.—T. F. CHUPEIN, in *Dental Office and Laboratory*.

**Method of Drawing the Temper from Swiss Broaches Used in Preparing Root-Canals.**—Put a layer of fine asbestos fiber on a piece of sheet iron or any convenient metal-holder; lay the broaches on this, spread out so as to avoid close contact. Then place another layer of fine asbestos over them, and, if you choose, another plate of sheet iron over all. Place this all over a large gas-burner, or any convenient heating apparatus, and heat for an hour or more. Allow the asbestos to become entirely cool, and the broaches will be found uniformly soft.—*International Dental Journal*.

**Nature of the Toxic Action of Cocain.**—Dr. Maurel, of Toulouse, discussed before the Société de Biologie the toxic properties of cocain, and said that the danger accompanying its administration was due to its penetration into the veins. Cocain, he says, changes the shape of the leucocytes from round to spherical. In man the leucocytes are weaker than in animals, and it takes 0.005 milligrams of cocain per kilogram of blood to bring about the change referred to. When the leucocytes become spherical they cannot pass through the capillaries of the lungs, and so form emboli, which cause death.

**Essentials to Success in the Making of Upper Dentures.**—Perfect plaster impressions; careful filling of the same; preparing the model by flaring the sides so that it will drop from the mold and not have to be lifted out; placing a thin film of wax over the hard center to avoid undue pressure either at the time of the making of the plate or afterward as the alveolar ridge may settle; using oiled sand, as it greatly facilitates the work; using Babbitt metal for the die, as this is the only metal or alloy which has all the requisites for a dental die; carrying the plate as high as it can be worn all around, and always higher over the canine than elsewhere, and the gum fuller; and finally, securing perfect occlusion, more depending upon this than upon anything else, always remembering that the six anterior teeth should never interfere.—L. P. HASKELL, in *Dental Brief*.



**Anesthesia with Nitrous Oxid and Ether in Patients Above Middle Age.**—Greater allowance of oxygen should always be made for patients above middle age, for although it may be found that their nervous and mental activity often seems to make them somewhat resistant to the effect of the anesthetic, they should not be heavily dosed with nitrous oxid, nor rendered at all cyanotic. The general circulation is at this time of life far less fitted to stand any asphyxial strain without the possibility of damage to the vessels or secondary cardiac depression.—*Journ. of Brit. Dental Association.*

**Facial Neuralgia due to a Hair Irritating the Membrana Tympani.**—A. Percy Allen reports the case of a man aged twenty-one years who had suffered from acute paroxysmal neuralgia for three months. Having excluded dental and ocular causes, the ear on the affected side was examined, and the membrana tympani was seen to be much injected. By means of the auriscope a hair was discovered lying along the meatus and pressing with its end on the tympanic membrane. It was removed and the patient immediately experienced relief. After a day or two the attacks of pain entirely ceased.—*British Medical Journal.*

**Absorption of Teeth in an Adult.**—Mr. Headrige describes, in the *Journal of the British Dental Association*, a case of absorption of an upper left lateral incisor and of an upper right central in a healthy man of about forty-five years of age. In the case of the central incisor the root had undergone almost complete absorption, while in the case of the lateral the alveolus was the seat of the same process. No painful phenomena were experienced, and excepting a slightly plethoric condition of the gums no disagreeable symptom was observed. This case is a curious one in view of the fact that the patient enjoyed exceptionally good health.

**To Remove Adherent Pieces of Modeling Composition from a Plaster Model.**—When the modeling composition of your impression has been a little too much heated in softening it for drawing the model, so that pieces remain adhering to the plaster, do not attempt to scrape them off, but take a small piece of the composition between the thumb and finger, hold the mass to an alcohol lamp until the part in the flame is molten, then press this forcibly to the pieces adhering to the plaster, giving it time to cool before withdrawing. The pieces on the model, if dry, will adhere more strongly to the composition than to the plaster, thus coming away.—*Ohio Dental Journal.*

**A Strange Cause of Fire.**—Fire may be caused by a bottle of water standing harmlessly on a table. A correspondent writes, showing how this may be the case: "In my laboratory the other day I detected the odor of burning wood, and, seeking the cause, noticed a tiny wreath of smoke rising from the counter. Setting aside a flask of water that stood close by, I sponged over the burning spot with a damp cloth. Shortly after I again detected the odor of burning wood, when to my surprise I discovered another burning spot on the table close to the water-flask. The flask was standing in the sunlight, thereby concentrating the rays to a focus on the top of the table, acting in this case as a burning-glass. A handful of highly combustible material was thrown over the burning spot, catching fire almost immediately. I cite this instance merely as a warning to chemists and apothecaries who may not realize how easily a fire may be started in their storerooms by the sun shining through bottles, flasks, and carboys of liquid, converting them for the time being into burning glasses of great power. I have in mind now the instance of a fire originating in a storeroom from this cause."—*Amer. Journ. of Pharmacy.*

**Borax Solution for Soldering.**—The following method of preparing borax solution has been described by J. T. Usher in the DENTAL COSMOS: "In soldering crowns I use a saturated aqueous solution of borax made by filling a bottle with water and dropping into it a lump of borax. This is allowed to boil on top of my vulcanizer or elsewhere, and the water will take up a certain amount of the borax, leaving the residue undissolved. An ounce of this solution will last a busy man about a year. In using it the piece to be soldered is simply moistened where the solder is wanted to flow, and the solder will run like a flash, much easier than when the borax powder is used."

**Method of Coppering Brass.**—Brass can be conveniently coppered with the following bath:

Caustic soda, 4 grams;  
Sugar of milk, 4 grams;  
Water, 100 grams.

This solution is boiled for fifteen minutes; four grams of copper sulfate are then added, and the mixture is thoroughly stirred. The objects to be coppered are placed in this solution, which should be at a temperature of 80° C. After this they should be thoroughly washed with water.—*Zahntechnische Reform*.

**Priority in Dental Operations.**—I have often observed in connection with dental society meetings that no matter what new thing is brought forward there is always somebody to claim it. I remember years ago a dentist said to me, "I can rise in this society and advocate something absurd and somebody present will say that he has tried it before." The subject of cohesive gold was under consideration, and he arose and said, "I have found that dipping my gold foil in a solution of cider vinegar and then drying it adds very much to the cohesive properties of the gold." He sat down. A man got up and said, "Yes, I indorse all that the gentleman has said. I have been using it for years."—*Trans. National Dental Association*.

**A Molar in the Maxillary Sinus.**—Dr. Siaras has reported to the Société de Médecine of Bordeaux the case of a patient from whose maxillary sinus a molar was extracted. The patient, who is forty-five years of age, noticed about twenty years ago the presence of a very small tumor upon the left side of the maxilla opposite the opening of Stensen's duct. The tumor remained of the same size until lately, when it began to increase and to become painful. It was thought that it was a neoplasm, and therefore the sinus was opened, when there was discovered a molar tooth, resting against the orbital wall of the sinus and surrounded by cheesy pus. The tooth was removed and the patient quickly recovered.—*l'Odontologie*.

**Disease Simulating Phosphor-Necrosis among Workers in Gutta-percha.**—Dr. Lazarus, of Neu-Weissensee, describes, in the *Allgem. med. Central-Zeitung*, a new disease which he has observed in twenty workmen in a gutta-percha factory. The lesions are exactly the same as those produced by phosphorus in phosphor-necrosis. The men who have carious teeth or roots are more liable to it than those whose mouths are in good condition.

[It is probable that the new disease to which Dr. Lazarus refers is caused by the inhalation of arsenical vapors from the pigments used in the process of coloring the gutta-percha. The symptoms of chronic poisoning by arsenic, antimony, and vanadium, although differing in degree of intensity, are the same as those shown in phosphorus poisoning, hence it is probable that the disease is caused by arsenic and not by the inert substance gutta-percha. This similarity in the toxic properties of these elements is interesting in view of their analogous chemical characteristics.—ED.]

**Rapid Anesthesia by Ethyl Chlorid.**—Anesthesia is obtained in from twenty to forty seconds by a method described by A. Malherbe (*La Presse Med.*, October 30, 1901). From two to four grams of ethyl chlorid are used. The anesthetic is poured on a simple compress, which is then hermetically applied to the nose and mouth of the patient, all air being temporarily shut out. The narcosis which follows lasts for three or four minutes. If a more prolonged anesthesia is desired the process is repeated. Owing to its simplicity and to the absence of disagreeable sensations, ethyl chlorid is also used as a preliminary to chloroform anesthesia in operations of very long duration.—*Medical News.*

**Treatment of Sensitive Dentin.**—Dr. Oswald Rubbrecht discusses in the *Revue de Stomatologie* the treatment of sensitive dentin by means of a 50 per cent. solution of chlorhydrate of erythrophlein in eugenol. He seals this preparation in the cavity for twenty-four or forty-eight hours. Sometimes the tooth becomes slightly sensitive to a few hours after the application, but inflammation of the pulp has never been observed, not even in those cases in which the cavities were of considerable depth. The action of this preparation is constant, and great credit should be given to it, as the good results obtained with it have been in cases in which all the usual agents had been used without bringing about any favorable result.

[Some years ago Dr. L. Lewin published a paper in which he stated that erythrophlein had strong anesthetic properties. This statement was the cause of much discussion among European investigators and its correctness was especially denied by Dr. Tweedy, of London.—Ed.]

**Lead Line upon the Gums an Important Factor in the Diagnosis of Lead Poisoning.**—Sir W. R. Gowers, in the *Lancet*, discusses lead and arsenic poisoning. He places great stress on the lead line on the gums as an aid to diagnosis. In rare cases it may be absent, but far more frequently it exists only in fragments. It may be at but two or three isolated spots, or at the tips of the projections of the gum between the teeth. Both the upper and the lower jaw should be carefully searched with a magnifying glass. If the symptoms of the patient are such as to suggest lead, and there is no line traceable on any part of the gums, one may be confident that it is not at work, provided the state of the gums is such as would give rise to it, meaning by this that the gums in places do not adhere closely to the teeth, thus allowing the deposition of albuminous material from the food, with which the lead combines, forming the sulfid. But if the gums are very perfect, lead as a factor in disease cannot be thus eliminated.

**A Case of Bifid Tongue.**—The patient, a laborer aged thirty-five, came to the Preston Royal Infirmary suffering from burns on the face. On asking him to put out his tongue I noticed that it was separated into two parts by a central depression extending backward for a quarter of an inch from the tip. From this depression a median groove (which was deeper near the bifid tip) extended backward on the dorsum of the tongue and also beneath it. The tongue was of normal size and healthy in appearance. The frænum linguæ was normal. The patient has had this deformity all his life. This congenital malformation is very rare. I have only found mention of one previous case,—that communicated by Brothers to the New York Pathological Society, and quoted by Holt in his book on "Diseases of Children."

Gould and Pyle ("Anomalies and Curiosities of Medicine," page 255), refer to cases of supernumerary tongue, and quote that of the Rev. Henry Wharton, chaplain to Archbishop Sancroft, who in his journal, written in the seventeenth century, says that he was born with two tongues and so passed through life, one tongue, however, gradually atrophying.—*Brit. Med. Journ.*



**Precautions Necessary with Hydrogen Dioxid.**—Two professors at Lyons, France, have recently called attention to the ready absorbability of hydrogen dioxid and the consequent danger of fatal gaseous embolism from bubbles of oxygen forming in the blood after absorption, when it is applied to an open wound or to detach an adherent dressing. In contact with the blood, as with pus, the effervescence continues. The oxygen is disposed of by the oxyhemoglobin in the blood if the amount is small, and no harm results. Inflamed tissues are peculiarly active in decomposing the dioxid, and absorption is always slow and gradual in all cases. Crolas advises rendering the dioxid alkaline by adding a saturated solution of sodium borate, a drop at a time, until litmus paper, first reddened by the dioxid, regains its blue color. Even aside from the fear of gaseous embolism the dioxid should always be neutralized, as it is liable to contain more or less sulfuric, phosphoric, or other acids. It should never be used stronger than eight to ten volumes, and always fractioned and in moderate amounts. With these precautions there need be no fear of the slightest evil effects from its use.—*Pacific Medical Journal*.

**Ideal Method of Filling Buccal and Large Approximal Cavities in Bicuspsids and Molars.**—In the *Journal of the British Dental Association* Dr. Witthaus, of Rotterdam, describes a method of filling buccal and approximal cavities in bicuspsids and molars which he highly recommends. The cavities are prepared as for cement without any attempt at retention except in those cases of deep bite where even for a cement filling undercuts are required. If the cavity is very deep a non-conducting layer of oxyphosphate is applied, this procedure to be followed in those cases where the enamel walls are so thin that the filling material would shine through. After the cavity is prepared, amalgam of the slow-setting, light-colored variety is mixed, and after squeezing out the mercury, the mass is divided into two parts. From one of these pieces of amalgam more mercury is squeezed out, which is then added to the other piece. Oxyphosphate, likewise of a slow-setting variety, is then mixed to a consistence softer than for filling, but not so soft as for crown-setting. Equal parts of the cement and of the soft amalgam are mixed up thoroughly, and the cavity is filled with this combination, leaving room for a covering layer of hard amalgam which is then applied, care being first taken that the margins of the cavity are clean.

**Opening of the Sphenoidal Sinus Through the Healthy Antrum.**—Furet, stimulated by the example of Jansen and Luc, who have reported cases of empyema of the maxillary sinus in which, after a broad opening into the cavity had been made, it was possible to see and operate on the anterior wall of the sphenoidal sinus, has carried the matter a step further by proposing to open the sphenoidal sinus through the antrum whether the latter cavity be sound or not. The operator must be certain that he has entered the real sphenoidal sinus, for in many cases the profuse bleeding may mislead him, when he has actually opened only an unusually large posterior ethmoidal cell. It happens not so very rarely that a dilated ethmoidal cell may seem to extend down and in a measure to cover in the sphenoidal sinus, and then an error is almost unavoidable. The result of an operation reported by Furet is said to have been most satisfactory. The patient was relieved of her headaches and was soon able to resume her usual employment.

The author believes that his method should be adopted when the maxillary sinus itself is involved in the inflammation; in every sphenoidal sinusitis with cerebral complications, and in every case where the nasal fossæ are extremely narrow or deformed.—*Therapeutic Gazette*.

**Complete Necrosis of the Ramus of the Mandible Consecutive to an Acute Osteitis of Dental Origin.**—At the Société des Sciences Medicales de Lyon, Dr. Viannay presented a voluminous sequestrum of the mandible that had been removed by Dr. Gangolphe. This sequestrum involved the ramus of the mandible as far as the neck of the condyle, the coronoid process, the angle of the mandible, and about two centimeters of the body of the bone. For four or five years previous to the removal of the sequestrum the patient had carious teeth. Four months before the operation was performed serious symptoms appeared. The jaw became swollen and a fistula opening within the mouth was spontaneously established. From that moment the patient began to expectorate pus; an offensive breath and a well-pronounced trismus were also the cause of much annoyance to him. A probe introduced into the fistula came in contact with a denuded and movable sequestrum. This was removed and the region was washed at frequent intervals during several days. The trismus quickly disappeared. At the present time the space produced by the removal of the sequestrum has been refilled, and although the new bone has not the exact and regular form of the lost mandibular angle, it nevertheless re-establishes the continuity of the mandibular arch and permits the patient to perform the masticatory movements.

**A Case of Compound Fracture of Both Jaws.**—H. Weighton, M.B., C.M., describes in the *Lancet* a case of fracture of both jaws in a young man, as the result of a bicycle accident. On examination the lower part of his face was found to be much swollen, although it presented no external wound. There was a complete fracture of the lower jaw near the symphysis with detachment of a part of the anterior portion of the alveolus containing three teeth. There was likewise a fracture of the upper jaw at each side in the region of the canine teeth, but with little displacement or deformity. The fractures were treated temporarily by means of wire between the teeth on each side, the whole being fixed with an external poroplastic splint fitted to the chin and with a four-tailed bandage. Next day these appliances were replaced by a gutta-percha interdental splint, the work of H. P. Friend, a surgeon dentist. The teeth were fixed in the sockets of the splint by means of a lining of soft gutta-percha. The poroplastic cap was reapplied to the chin and fixed in position by means of a piece of elastic bandage carried over the head. The mouth was rinsed out frequently with dilute Condyl's fluid. After five weeks' time the splint was removed and the fractures were found to be firmly united, with the exception of the fractured alveolar margin of the lower jaw, which ultimately became a sequestrum and had to be removed, [Condyl's fluid is a solution of potassium permanganate.—Ed.]

**Curious Symptoms Following Tooth-Extraction.**—A patient aged thirty years presented himself at the Royal Dental Hospital of London in order to have a tooth removed which had been fractured in the country a week previously. During the whole week he had suffered great pain, which had only ceased on the morning of the day he came to the hospital. The roots of the lower left first molar were removed without any special difficulty, the patient, however, complaining of excessive pain immediately after the operation. This was speedily relieved by the use of hot water, and the man then seemed quite well. Within from three to five minutes after the extraction he suddenly complained of severe "pins and needles" in the legs, which later affected the arms. The patient assumed a very bad color, and on being placed in a reclining position asked to be allowed to sit up, as in Dr. Green's case. The whole body became rigid, with strong contraction of the muscles of the forearm and the flexors of the fingers, and adduction of the thumbs. Respirations were hurried, with accompanying stridor; with pulse quick and feeble. The patient was conscious all the time and was able, though with



difficulty, to answer questions. The teeth were clenched, the pupils of the eyes widely dilated. Both extremities became quite cold, and had a moist, clammy feeling. He was vigorously rubbed for about quarter of an hour and recovered slowly until he was able to warm himself by swinging his arms, and he eventually went away apparently not much the worse.—W. COLLIER PRIDHAM, *Journ. of Brit. Dental Association*.

[A case closely resembling this was reported by Dr. A. Stanley Green in a letter published in the *Lancet* August 10, 1901.—Ed.]

**A Case of Glossitis Caused by a Lower Right Molar.**—Dr. Stavisky, Paris, in a paper read before the Société d'Odontologie describes the case of a man who came to him for consultation with regard to a highly inflamed condition of the tongue. The family history reveals the presence of the uric acid diathesis among its members. Some time previous to his coming to the office he had consulted a physician who diagnosed the trouble as a buccal leucoplakia. At that time he complained only of an annoying sensation, no real pain being present. These symptoms lasted one month and then disappeared. The physician again cauterized the affected parts. Three weeks after this treatment the patient complained of severe pain in the tongue. The physician then prescribed some anodyne gargle. The pain decreased for a while, but then returned with greater intensity. From that time the right side of the tongue began to swell, the swelling increasing daily. The patient could not take any solid nourishment, not only on account of the size of the inflamed organ, but also because of the pain brought about by mastication. "The mouth is kept open nearly all the time, and the saliva escapes from it. The right border of the tongue is more inflamed than the left, but as the edema is so considerable there is very little difference between the size of the two halves of the organ." While examining the borders of the tongue a small ulcer was found opposite the lower right molar.

"The lingual half of the masticating surface of this tooth was filled with cement, slightly disintegrated at the lingual border. This border was very thin, and it was only by touching it with the finger that one could realize its sharpness. Without any doubt this glossitis had been caused by this sharp edge." Either of two modes of treatment could have been followed: First, to polish the sharp edge and treat the tooth; second, extraction. Dr. Stavisky followed the second course because of the difficulty of introducing a polishing wheel on account of the pronounced swelling. He prescribed a mouth-wash, and ten days afterward all traces of the glossitis had entirely disappeared.

**Epithelioma of the Maxilla Arrested by Injections of Nectrianin.**—The *Gazette des Hôpitaux*, of Toulouse, publishes a report by M. Vianey, interne of the Hôtel-Dieu, on the arrest of a recurring epithelioma of the maxilla by means of injections of *nectrianin*. The patient, a man sixty years of age, had lost all his teeth ten years previous to his entrance to the hospital. Some time before the loss of the right upper incisors an abscess with fistula on the palatal side of the gums developed. For several years pus constantly exuded from it. The fistulous region became very painful. The cheek, lower eyelid, and ear on the same side became also the seat of severe pain. The size of the maxilla began to increase, especially in the region of the gums; small hemorrhages took place, and at times pus and at other times blood would come from the nose. Mastication became difficult, the pressure of mastication upon the maxilla causing great pain. Dr. Chamayou diagnosed the case as one of epithelioma of the maxilla, and the patient was operated upon for its removal. Sixteen days afterward the patient left the hospital apparently well, but after the lapse of two weeks



copious hemorrhage took place from the field of operation. To arrest it Dr. Dupin cauterized the granulations around the wound, and a few days afterward daily applications of arsenical solutions were made. The hemorrhage did not recur, but the general condition did not improve. The patient then re-entered the hospital. The wound had healed, but the lower part of the cheek and especially the lower eyelid were the seat of considerable edema. Pressure against the bony cicatrix caused acute pain. Daily injections of  $2\frac{1}{2}$  cc. of nectrianin were then begun. After the third injection the palpebral edema diminished slightly and the patient left the hospital, but he continued to complain of severe pains in the region of the wound. The injections were continued at different periods during two months, when all the conditions present pointed to non-recurrence of the epithelioma.

---

## HINTS, QUERIES, AND COMMENTS.

---

**Putty as a Root-filling.**—Four years ago I came to the conclusion that to devise an easy method of opening fine root-canals or to invent an insoluble cement (not to merely advertise a cement as insoluble) would be a difficult task; but, given a fine canal unreamed out, say in a lower molar, but with the nerve removed,—I repeat, given a canal in this condition, it appeared to me that there should be some material at hand that could be more easily and surely inserted than a gutta-percha cone; in fact, something more efficient and more easily manipulated than any of the half-dozen or so well-known root-canal fillings.

The faults of the various root-fillings are briefly as follows: Gold foil may never reach the end. Fillings with wisps of wool incorporated have the same fault. Copper points, lead points, and wood points variously prepared may not reach the foramen, and should they do so they may not fit the foramen. Beeswax for a fine canal I give to my worst enemy. Oxychlorid, though good in many ways, will not set minus rubber dam, nor should moisture come down the canal.

Reviewing the faults of the various fillings, I asked myself the question, What properties should a root-filling possess? My answer was: (1) A certain consistence that would enable it to be pushed into and along any canal that would take a Donaldson bristle. (2) Non-stickiness. (3) A slow setter. (4) When set should be more easily drilled than dentin. (5) Should be insoluble in and impermeable to the fluids of the mouth. (6) Should be non-irritating to tissue at foramen. Putty possesses all these properties.

For several months I examined this, that, and the other, until one day, reading in the DENTAL COSMOS that the latest arrival in the field was coal-dust, I decided henceforth not to confine myself to the materials in the pharmacopeia, but to criticize and try if necessary the most humble material. It struck me one day that the hard putty on the window might possibly be the thing.

For about three and a half years I have now continuously used this material with nothing but good results. In upper teeth on several occasions the putty has been pushed into the abscess sac, but the surplus putty neatly detaches itself from the apex of the tooth, and the next day exudes in one

piece through the fistula, and in a few days or a week a cure is the result. It is an advantage that the putty is impervious, while soft, as it is sometimes necessary to fill a canal into which moisture creeps as fast as dried out; in such a case a mechanically perfect filling will frequently give perfect results notwithstanding the fact that a septic condition existed during the operation.

Make the putty fresh for each case. Two small bottles are necessary, one containing prepared chalk, the other what is called double-boiled linseed oil. A small amount of liquid and powder should be taken from each bottle, placed on a palette, and mixed after the manner of an oxyphosphate. The putty should be mixed fairly stiff and rolled between the fingers; the fault will usually be in mixing it too thin. It is then placed in the tooth cavity and worked into the canal, beginning with large root-pluggers and changing them for smaller and smaller till sometimes a Donaldson nerve bristle snapped off is utilized. It is then as well to work back with the pluggers, from the smallest, finishing with the largest; a piece of temporary gutta-percha can be rammed in the canal over all. The surplus putty in the pulp-cavity can then be washed out with warm water or alcohol.

Putty sets best on wood exposed to the atmosphere, and takes a long time. Whether it takes six months or a year to set in a root is immaterial, as it is waterproof or ink-proof, whether soft or hard. Place hard putty from a window, or a ball of newly made soft putty, in ink for some days; then take out, wash, and cut in halves, and you will observe that the ink has not penetrated.—CHAS. TAYLER, D.D.S., *Hamilton, Victoria, Australia.*

**A New Root-filling Material.**—Many suggestions have been offered as to the best methods of practice and materials for use in that most important, but very much abused, and often neglected, operation of filling narrow and tortuous root-canals, and especially the buccal roots of upper molars and the anterior canals of lower molars.

During the past five months I have been experimenting with various materials in order to simplify, if possible, what often proves a rather tedious operation, and, after working on nearly every plastic substance that I could think of, found ordinary glazier's putty to be a most excellent preparation, and one which, in my hands has, during the limited time that I have been using it, proved itself to be superior to anything that I have ever used. It is free of most of the vices of the materials ordinarily used, while its virtues are: Its insolubility; it does not expand; its contraction is infinitesimal, and then only under heat; it is a non-irritant and non-conductor; it will not absorb moisture; does not become too hard when hidden away from the air; is very easy of manipulation, allowing itself to be carried or forced into the most inaccessible cavities, while the oily nature of the substance prevents the absorption of any gases or moisture that may be present in the tubuli. The formula that I have been using is as follows:

R—Whiting, 3ss;  
 Aristol, grs. xij;  
 Ol. linum, q. s. to make the putty  
 of a doughy consistence.

The whiting and aristol should be thoroughly ground together and sieved before the oil is added, then add the oil, in small quantities only. The whole

mass should be thoroughly kneaded between the fingers, and as it gets harder to work it should be pounded with a broad-faced hammer. The putty should be as thick as dough to be in its best state for use. Place the preparation in a wide-mouth glass-stoppered bottle, and always knead between the fingers before using.

As to the method of preparing roots, this has been discussed and written upon so often that what I could add would not be of any interest, therefore I merely say, prepare the root in the usual way and afterward carry small quantities of the material up the canal on the point of a worn-out Donaldson bristle; it is then condensed by using the bristle, with a few fibers of cotton twisted around, with a pumping motion, or by forcing in a small pellet of cotton which will drive the material before it.—J. LEVIN, D.D.S., M.D.S., *Melbourne, Australia.*

**An Interesting Point in the Operative Treatment of Empyema of the Antrum of Highmore.**—I do not purpose going deeply into the various opinions regarding the causes of empyema, but should like to remark in passing that the theory that this disease is commonly due to some dental lesion is somewhat in disfavor of late. Though when one considers the close anatomical relation existing between the roots of the bicuspid and molars and the floor of the cavity the probability of an alveolar abscess being the cause seems very patent. The prevailing opinion is that it follows on some constitutional derangement, such as influenza, predisposing conditions being polypi, hypertrophic rhinitis, deviation of the septum, etc., which by interfering with the opening under the middle turbinal prevent the escape of any fluid the antrum may contain.

Operative treatment is resorted to, and this consists in opening at a suitable point, curetting, draining, and subsequent douching treatment. The old operation of extracting one or more teeth and opening through their sockets has not been practiced so generally since the medical profession and patients have been educated to value sound natural teeth as organs not to be parted with till every means for their preservation has been exhausted. Another difficulty is that the thickness of the walls through which the instrument has to pass renders it difficult, if not impossible, to thoroughly curette the floor of the sinus.

Opening through the mesial wall after removing part of the anterior portion of the inferior turbinal has its disadvantages: The difficulty of maintaining a channel for further treatment. The position of the opening renders the douching by the patient a very awkward procedure, as, although the passing in of a syringe point or a Eustachian catheter by the experienced hand of surgeon or nurse is an easy matter, the average patient finds it a very difficult feat to accomplish. The danger of having an opening into a cavity in which was probably the original seat of the disease.

The operation usually practiced when there are no teeth missing or badly affected by caries is to remove a portion of the wall in the region of the canine fossa. The sinus can be readily curetted and the opening maintained by means of a plug retained by a band attached to one of the bicuspid.

My object in bringing up the subject is to draw attention to a point which does not seem to have attracted any serious notice heretofore. At least I can find no reference to it in surgical authorities dealing with this branch of practice. To make my point the more clear, I will take the liberty of



reminding you of some dry details of the distribution of the nerves, etc., in this region.

The diagrams showing the course of the superior dental nerves vary in all the text-books that I have seen. They all agree in this respect: the anterior division supplies the incisors and canines, the middle division the bicuspid, and the posterior division the molars. De Morgan in Tomes represents the posterior division as two branches, one supplying the molars and the other reinforcing the plexus formed by the three divisions over the roots of the molars and bicuspid. The anterior superior dental branches off the maxillary division of the fifth just before it leaves the infra-orbital canal to emerge through the infra-orbital foramen. It passes just below the lower boundary of the foramen and proceeds downward and forward in a canal in the anterior wall of the antrum to supply the incisors and canine.

The middle superior dental is not always present as a distinct branch, in which case its fibers are associated with those of the anterior superior dental. When distinct it passes from the infra-orbital canal at a variable point, usually rather toward the posterior part of its floor. It then proceeds downward and forward in a canal traversing the anterior wall of the antrum and floor of the canine fossa to supply the bicuspid.

The posterior superior dental is usually represented as two branches, leaving the maxillary division while it lies in the spheno-maxillary fossa. They proceed downward and forward on the zygomatic surface of the maxilla for a short distance, then enter the posterior wall of the antrum and proceed forward to supply the molars and communicate in a plexiform manner with the middle and anterior superior dental to form the superior dental plexus.

Each of these nerves furnishes, amongst others, twigs to supply the mucous membrane of the antrum.

The blood supply in this region is derived from branches of the third part of the internal maxillary artery which in general traverse the canals with the dental nerves.

It will be obvious after this description that in opening into the antrum through the canine fossa, the middle superior dental, or at least that portion of the superior dental plexus supplying the bicuspid, is severed, thus depriving those teeth of their main nerve and blood supply.

There seem strong *a priori* reasons for supposing that such an injury to a nerve would be followed by grave disaster to the teeth. The result of severance of the pulp from its nerve supply is, as we know, degeneration and ultimate death. In the present case the bicuspid would be the teeth to suffer. Should death occur we must then expect in many cases pericementitis and abscess to supervene. If suppuration sets in it seems possible that sometimes pus may find its way into the antrum through the floor, which is perhaps weakened by long-standing inflammatory conditions, and so presumably retard or prevent the cure of the disease. Or even short of this, the presence of an alveolar abscess in close proximity would seem likely to keep up a reflex irritation in the antrum tending to prevent or delay the natural healing or cure of the disease conditions therein existing. If it be true that some such causes as these, direct or reflex, are indeed sometimes sufficiently potent to excite inflammation in a previously healthy antrum,—and some think that this is the most frequent of all causes of antral inflammation,—it is by so much the more likely to have a detrimental influence on the health

of an already diseased sinus. It seems advisable, at any rate, that after the canine fossa operation, the patient should be sent to a dentist for examination. As I will point out later, it will be necessary to have several examinations at, say, monthly intervals.

Of course I recognize the possibility that the life of the pulp may be maintained by fibers passing in below the level of the opening made in the bone from the superior dental plexus. The course of the fibers through the plexus has, as far as I can ascertain, not yet been followed.

A case illustrating the fact that life may persist for some time after the main trunk is supposedly severed came under my notice a short time ago. A lad was sent to me for a plug to maintain an opening through the canine fossa. I saw him a month after the operation and carefully examined the bicuspid, finding them undoubtedly alive. I next saw him about twelve months afterward, and on transilluminating found the bicuspid, which were quite sound, dead; I fancied that the first molar was also affected. The diagnosis in this case was not conclusive, as the tooth was very extensively filled.

I do not, as a rule, see patients again after fitting a plug, but in all cases which have come under my notice the bicuspid were dead.

I think the point raised is of interest to our profession, even if the theory that it is the means of preventing the cure of a not uncommon disease is untenable, and I shall be glad if the discussion of it should be the means of throwing additional light on the matter in the form of the practical experience of the members.—*Read by MR. J. HOUGHTON BRADLEY, before the Odontological Society of New South Wales.*

### **Adrenalin for Arrest of Hemorrhage Following Teeth Extractions.—**

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—I think it will be of interest to the profession to know that I have found the new preparation "adrenalin" of very considerable use in my daily work. It was in cases of hemophilia that the remedy first suggested itself, to arrest the uncontrollable bleeding. I may mention that adrenalin is the active principle of the suprarenal capsule, and is now quite a favorite astringent with nose and throat specialists, facilitating examinations of the deep cavities, and rendering the site of operation bloodless, both during and after the performance. This fact gives it a great advantage over the so-called extracts of the gland, which were unclean and unreliable; besides, adrenalin is one thousand times as strong.

As my dental practice is limited to extracting teeth, I have had ample opportunity of thoroughly testing the virtues of this long-sought-for active principle, and I do not hesitate to recommend it as the most powerful hemostatic known. Its action is not unlike that of ethyl chlorid, contracting the capillaries and numbing the parts to the same degree without any disadvantages. Whenever secondary hemorrhage is anticipated, as in cases of hemophilia, you can rest with assurance by giving the patient a small vial containing a weak solution of adrenalin, which he can apply himself if necessary. Recently, while speaking with other surgeons, I found they had had a like experience. I understand, also, that adrenalin is of considerable use in fitting crowns, by preventing oozing, as well as on account of its astringent action on the gums and its producing the requisite local anesthesia.

Yours truly,

NEW YORK CITY.

C. S. McNEILLE.

# Publisher's Notice.

## A SPECIAL WORD TO OLD SUBSCRIBERS.

MORE than nine-tenths of the subscriptions for the DENTAL COSMOS run with the volumes, and consequently expire with the December issue each year. Those of our subscribers to the last volume whose subscriptions expired last month, and who have not yet renewed, will confer a favor by attending to the matter at once. This issue is sent to all of the last volume's subscribers, whether they have renewed or not, but after this number the magazine will be sent only to those whose renewals have been received.

THE S. S. WHITE DENTAL MFG. CO.,  
*Publisher.*

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

- Congrès international de médecine.** xiii. Paris, 1900. Comptes-rendus. Section de stomatologie. Paris, 1900, Masson et Cie., 2 pl., 318 pp. 8°.
- Grässner (F. B. R.)** Ueber Unterkiefer-Frakturen. Halle a S., 1901, C. A. Kaemerer & Co., 46 pp. 8°.
- Hopstein (C. H. J.)** \*Ueber Zungen-tuberkulose. Bonn, 1901, J. Bach, Wwe., 36 pp., 1 l. 8°.
- Kolbe (V. H. J.)** \*Ueber Cysten im Oberkiefer. Erlangen, 1901, E. T. Jacob, 35 pp. 8°.
- von Kryger (M.)** Eine seltenere Geschwulstbildung in der Zunge. (Endotheliom.) Erlangen & Leipzig, 1901, G. Böhme, 22 pp., 2 pl. 8°.
- Reiniger (A.)** \*Anatomie und Ontogenie der beiden Dentitionen von Lepus cuniculus. Erlangen, 1901, A. Vollrath, 29 pp., 2 l. 8°.
- Ruijs (T. M.)** Onderhoud der tanden, ook met betrekking tot het algemeen welzijn. Alkmaar, 1901, Coster & Zoon, 15 pp. 12°.
- Smale (M.) and J. F. Colyer.** Diseases and injuries of the teeth, including pathology and treatment. 2. ed., revised and enlarged by J. F. Colyer. London, 1901, Longmans, Green & Co., xiii, 685 pp. 8°.
- Stolper (A.)** Erste Hilfe bei Zahn-Defekten und -Schmerzen. Ein Hinweis für jedermann zu Beachtung seiner Zähne und des Mundes. Leipzig, 1901, 24 pp. 16°.

**Aguilhon de Sarran.** Sur les vaisseaux sanguins des racines dentaires humaines déductions pathologiques. Cong. internat. de méd. C.r., Par., 1900, Sect. de stomatol. 50-53.—**Ahmann (G.)** Einige Worte über die leutischen Schleimhaut affectionen in der Mundhöhle. J. f. Zahnh., Berl., 1901, xvi, 165-168.—**Albrecht (P.)** The four intermaxillary bones, hare-lip and the morphological value of the upper incisor teeth of men. [Trans. from the French by Dorothy K. Pearsall.] Items Interest, N. Y., 1901, xxiii, 833-852.—**Allard.** Du traitement des sinusites maxillaires par les instillations. Ann. Soc. med.-chir. du Brabant, Brux., 1896, vi, 107-117.—**Allen (A. H.)** Amalgam. Ohio Dent. J., Toledo, 1901, Toledo, 1901, xxi, 511.—**Alsen (V.)** Zur Therapie der chronischen Kieferhöhlenempyem nebst Angabe unserer Operationsmethode. Arch.



1. Laryngol. u. Rhinol., Berl., 1901, xii, 227-247.—Ames (W. B.) A bridgesplint for desperate cases of pyorrhea. Dental Reg., Cincin., 1901, lv, 545-550.—Amoedo. Contribution à l'étude de la prothèse immédiate des maxillaires. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 76-79. Amoedo (O.) Contribution à l'étude des travaux à pont en prothèse dentaire. *Ibid.*: 186-208.—Les dents du pithecanthropus erectus de Java. Rev. odont., Par., 1901, xx, 447-452.—Antonopoulos (G.) Sur un cas de fracture de la mâchoire supérieure. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 59-62.—Reimplantation des dents mortes avec abcès. *Ibid.*: 118.—Atwater (H. G.) Histology: its advantages to our profession. Tr. Calif. Dent. Ass., San Jose, 1901, 90-95.—Bacque. Manifestations buccales consécutives à la grippe. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 208-213.—Barthélemy (T.) & G. Jacques. Nouvelle recherche sur les "langues blanches" (leucoplasies, syphilis, cancer). Cong. internat. de méd. C. r., Par., 1900. Sect. de dermatol. et de syph., 502-548.—Baumgarten (E.) A pruritis senilis linguae. Orvosi hetil., Budapest, 1901, xlv, 675-677. Bertarelli (E.) & U. Calamida. Sul significato eziologico delle forme blastomicetiche nelle tonsille. Arch. ital. di otol. [etc.], Torino, 1901-2, xii, 15-28. Billeter (C.) Ueber die Entfernung eines Odontoms und die Berechtigung der Aethernarkose bei schweren Zahnextraktionen. J. f. Zahnh., Berl., 1901, xvi, 189-191.—Blumer (G.) & A. MacFarlane. An epidemic of noma; report of sixteen cases. Am. J. M. Sc., Phila., 1901, n. s., cxxii, 527-536.—Boenneken (H.) Ueber die Nachbehandlung der Zahnextraktionswunden. J. f. Zahnh., Berl., 1901, xvi, 181.—Boniquet (J.) La clinique démontre solidarité pathologique entre la bouche et le reste de l'organisme. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 120-131.—Bonsall (C. F.) Solder-making in the dental laboratory. Dental Brief, Phila., 1901, vi, 653-655. [Discussion].—Bouron. De l'anesthésie par le chloroforme pour les extractions dentaires multiples. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 107-118.—Bridge (N.) The dentists as seen by the doctors. Tr. Calif. Dent. Ass., San José, 1901, 27-37.—Also: Pacific Dent. Gaz., San Fran., 1901, ix, 721-731.—Brieger (O.) Zur genese der Rachenmandelhyperplasie. Arch. f. Laryngol. u. Rhinol., Berl., 1901, xii, 254-277.—Brown (E. E.) Nitrous oxid and oxygen as a general anesthetic. Cleveland J. M., 1901, vi, 471-478.—Brown (P. K.) & W. Ophuls. A fatal case of acute primary infectious pharyngitis. Tr. M. Soc. Calif., Sacramento, 1901, 93-101, 1 pl.—Capon (F. J.) Lectures on crown- and bridge-work. Dominion Dent. J., Toronto, 1901, xiii, 413-417.—Carter (H. W.) Practical results with one thousand cases of nitrous oxide and ether narcosis. Med. Rec., N. Y., 1901, lx, 732-734.—Case (C. S.) Regulating pulpless and pyorrhea diseased teeth. Dental Rev., Chicago, 1901, xv, 1055-1058. [Discussion], 1070-1076.—Casto (F. M.) Syphilitic manifestations in the mouth. Ohio Dent. J., Toledo 1901, xxi, 505-510.—Chambers (T. R.) Glandular complications of tonsillitis and peritonsillitis. Laryngoscope, St. Louis, 1901, xi, 302.—Cheatham (W.) The more common diseases of the tonsils, with their surgical treatment. Internat. Clin., Phila., 1901, 11. s. iii, 1901, 286-288.—Chompret. Malformations buccales dans l'hérédo-syphilis. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 146-157.—Choquet. Dentine sterilization. Brit. J. Dent. Sc., Lond., 1901, xlv, 977-979.—Cleft palate in the bone. Dental Office and Lab., Phila., 1901, xv, 175.—Cohn (R. D.) The pathology and treatment of hypertrophy of the pharyngeal ring. Tr. M. Soc. Calif., Sacramento, 1901, 135-144.—Combe. Des rayons X, leur utilisation en stomatologie et en pathologie dentaire; revendication de priorité du procédé. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 270-273.—Constant (T. E.) The movements of the mandible. Brit. J. Dent. Sc., Lond., 1901, xlv, 915; 963.—Cordes (H.) Histologische Untersuchungen über Pharyngitis lateralis, zugleich ein Beitrag zur Pathologie der Balgdrüsen. Arch. f. Laryngol. u. Rhinol., Berl., 1901, xii, 203-226.—Curtis (G. L.) Influence of electric oxonation on disease. Dominion Dent. J., Toronto, 1901, xiii, 425-428.—De Beule (F.) Contribution à l'étude des lésions des cellules de l'hypoglosse après l'arrachement du nerf. Névraie. Louvain, 1901, iii, 143-155.—De Rosa (M.) Le flogosi acute della base della lingua. Gior. med. d. r. esercito, Roma, 1901, xlix, 1022-1037.—Dunning (Edwin James) [1821-1901.] Kimball (C. O.) (A biographical sketch of Edwin James Dunning.) Internat. Dent. J., Phila., 1901, xxii, 808-812, port.—Eager (J. M.) Denti di Chiaie (Chiaie teeth). Pub. Health Rep. U. S. Mar. Hosp. Serv., Wash., 1901, xvi, 2576.—Ehrmann. Considérations sur la palatoplastie en deux temps dans les divisions congenitales du palais. Bull. Acad. de méd., Par., 1901, 3. s., xlv, 325-340.—Ekstroem (J.) Die Temperaturverhältnisse im Munde. Odont. Bl., Berl., 1901-1902, vi, 247-250.—Esterly (Charles E.) [1863-1901.] (Obituary.) Dental Cosmos, Phila., 1901, xliii, 1347-1349.—Eternod (A. C. F.) Distribution des efforts mécaniques dans l'appareil masticateur. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 173-181.—Faure (J. L.) Traitement des tumeurs malignes du plancher de la bouche. *Ibid.*: 181-183.—Fenchel. Exact Messungsmethoden der Formveränderung von Amalgamen. Cor.-Bl. f. Zahnärzte, Berl., 1901, xxx, 289-293.—Ferlito. Un caso di sarcoma peduncolo-

- lato della lingua. *Rassegna internaz. d. med. mod.*, Catania, 1900-1901, ii, 313-318.—**Ferrier** (J.) Sur le plan incliné appliqué au traitement de certaines déviations des dents antérieures; conditions du bon fonctionnement de l'appareil moyen d'abrèger la durée de son application. *Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol.* 297-299.—**Ferrier** (P.) Du mode de déhiscence des gencives au moment de l'éruption des dents et de son rôle dans les diverses inflammations circumdentaires osseuses et ganglionnaires. *Ibid.*: 183-186.—**Odontocie et ostéocie. *Ibid.*: 237-243.—**Flagg** (E. M.) Jumping the bite (backward). *Dental Brief*, Phila., 1901, vi, 641-653.—**Förberg** (E.) Is the symmetrical extraction of the first permanent molars justifiable? *Dental Rev.*, Chicago, 1901, xv, 1025-1055.—**le Fort** (R.) Fractures de la mâchoire supérieure. *Cong. internat. de méd. C. r., Par., 1900. Sect. de chir. gen.* 275-278.—**Foster** (W. G.) Administration of nitrous oxid by the Hunter system. *Dental Cosmos*, Phila., 1901, xliii, 1306-1310.—**Fournier** (A.) Des relations de la leucoplasie buccale avec la syphilis et le cancer. *Cong. internat. de méd. C. r., Par., 1900. Sect. de dermatol. et de syph.* 496-502.—**Franchette**. Cours de mécanique et physique appliquées à l'art dentaire. *Rev. odont.*, Par., 1901, xx, 389-398.—**Frigoli** (L.) Un caso di empiema dell'antro di Hignoro. *Gior. med. d. r. esercito*, Roma, 1901, xlix, 1009-1016.—**Fürst** (J.) Der Einfluss der Zivilisation auf die Zähne. *Zahnärztl. Wchnbl.*, Hamb., 1901, xv, 113.—**Fulton** (H. D.) A place to clean the teeth needed in railroad car. *J. Am. M. Ass.*, Chicago, 1901, xxxvii, 1261.—**Gardner** (H. B.) The administration of anæsthetics for dental operations. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 552-554.—**Gilmer** (T. L.) Odontomes. *Dental Reg.*, Cincin., 1901, lv, 541-545.—**Gires** (P.) Fistules odontopathiques. *Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol.* 244-251.—**Giuria** (P. M.) De l'intervention thérapeutique dans les anomalies de position et la direction des dents. *Ibid.*: 214-222.—**Goadby** (K.) Some points in the ætiology of dental caries. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 538-548.—**Goddard** (C. L.) Incisor and profile; a study in comparative anatomy. *Dental Digest*, Chicago, 1901, vii, 841-855.—**Görke** (M.) Ueber Recidive der Rachenmandelhyperplasie. *Arch. f. Laryngol. u. Rhinol.*, Berl., 1901, xii, 278-288.—**Goldstein** (M. A.) Acute suppuration of the faucial tonsil and peritonsillar abscess. *Laryngoscope*, St. Louis, 1901, xi, 298-301.—**Goslee** (H. J.) The preparation of roots for crown- and bridge-work. *Items Interest*, N. Y., 1901, xxiii, 811-832.—**Gouly**. Kyste dentaire du maxillaire supérieur. *Echo méd.*, Toulouse, 1901, 2. s., xv, 491.—**Goune**. Quelques radiographies intéressantes en stomatologie. *Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol.* 277-281.—**Grady** (R.) More education: 1. For the dentist himself, and 2. for the patient.—*Dental Cosmos*, Phila., 1901, xliii, 1310-1316.—**Grant** (D.) Explanation of appearances in some cases of acute lacunar tonsillitis which simulate excavating ulcers. *J. Laryngol.*, Lond., 1901, xvi, 596-598.—**Grayston** (W. C.) Experiments with amalgam. *Items Interest*, N. Y., 1901, xxiii, 801.—**Greve**. Zahnschmerzen. *Zahnärztl. Wchnbl.*, Hamb., 1901, xi, 121.—**Guttmann**. Neue Methoden für Herstellung und Anwendung von Porzellan-Einlage-Füllungen. *Cor.-Bl. f. Zahnärzte*, Berl., 1901, xxx, 285-289.—**Guy** (W.) The defect of the dental curriculum. *Dental Rec.*, Lond., 1901, xxi, 481-486.—**Halász** (H.) Orrgarat polyp ritka esete. [A rare case of naso-pharyngeal polypus.] *Orvosi hetil.*, Budapest, 1901, xlv, 675; 697.—**Hamm**. Ein Fall rheumatischer Erkrankung eines Kiefergelenks. *München. med. Wchnschr.*, 1901, xlviii, 1791.—**Hartz** (H. J.) Chronic or recurrent peritonsillar abscess. *Laryngoscope*, St. Louis, 1901, xi, 303.—**Hatch** (H. D.) Military dental practice: its modifications and limitations. *Internat. Dent. J.*, Phila., 1901, xxii, 749-753.—**Heller** (J.) Die klinische Bedeutung der glatten Atrophie des Zungengrundes (Virchow). *Deutsche med. Presse*, Berl., 1901, v, 157-159.—**Hellet** (P.) Drei Fälle von Nasenrachengeschwülsten. *J. f. Zahnh.*, Berl., 1901, xvi, 182-184.—**Hepburn** (Robert). [1810-1901.] (Obituary). *Dental Rec.*, Lond., 1901, xxi, 514-516, port.—**Hodson** (J. F. P.) Matrices corredizas contorneadas. *Rev. dent. amer.*, Filad., 1901, ix, 168-170.—**Hunt** (A. O.) Use and abuse of air-chambers. *Brit. J. Dent. Sc.*, Lond., 1901, xlv, 921-924.—**Imbert** (L.) and E. Jeanbrau. Pathogénie des grenouillettes. *N. Montpel. méd.*, 1901, xiii, 385; 430; 452.—**International Dental Federation**: First general meeting, held at Cambridge, England, 1901. *Internat. Dent. J.*, Phila., 1901, xxii, 789-796.—**Jarre**. Traitement des maladies inflammatoires et ulcéreuses de la muqueuse buccale chez l'homme par l'acide chromique. *Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol.* 231-237.—**Johnson** (C. N.) Periodos críticos en la historia de los dientes humanos. *Rev. dent. amer.*, Filad., 1901, ix, 167.—**Johnson** (R.) A case of actinomycosis in parotid gland. *Tr. Clin. Soc. Lond.*, 1901, xxxiv, 235.—**Kalivoda** (K.) A szajes gáratny-ákhártay szerepe heveny fertőző betegségeknel. [The part of the buccal and œsophageal mucous membrane in acute infectious diseases.] *Gyógyászat*, Budapest, 1901, xli, 664.—**Kelson** (W. H.) Primary chancre of the tonsil. *Brit. M. J.*, Lond., 1901, ii, 1228.—**Kirkpatrick** (T. P. C.) The asphyxial factor in nitrous oxide anæsthesia. *Med. Press & Circ.*, Lond., 1901, n. s., lxxii, 431-434.—**Knight**. Etudes des tumeurs bénignes du palais et du voile du palais. *Cong.***



- internat. de méd. C. r., Par., 1900. Sect. de stomatol. 252-259.—**Kovarsky**. Sur l'emploi du cellulose-acétone en art dentaire. *Ibid.*: 294-297.—**Lack** (H. L.) On the removal of tonsils in adults. *J. Laryngol.*, Lond., 1901, xvi, 599-602.—**Lafarelle** (E.) Sur deux cas de kystes osseux intra sinusiens. *Rev. hebdomadaire de laryngol.* [etc.], Par., 1901, ii, 513-523.—**Law** (H.) Ursachen und Differentialdiagnose der Nasenerkrankungen. *J. f. Zahnhe.*, Berl., 1901, xvi, 191.—**Lazarus** (E.) Beitrag zur Behandlung der Zähne taubstummer Kinder. *Allg. med. Centr.-Ztg.*, Berl., 1901, lxx, 1029.—**Lebedinsky**. Affections spécifiques et polymicrobiennes. *Rev. odont.*, Par., 1901, xx, 398-409.—Milieu buccal, son équilibre biologique; affections spécifiques et polymicrobiennes. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de stomatol. 157-172.—**Lebedinsky** & C. Lée. Contribution à l'étude de la stomatite ulcéro-membraneuse. *Rev. de stomatol.*, Par., 1901, viii, 433-442.—**Le Dentu**. Sur l'uranoplastie en deux temps. *Bull. Acad. de méd.*, Par., 1901, 3. s., xlv, 348-350.—**Lund** (Oliver Pancoast.) [—1901.] L. (Oliver Pancoast) *Lund, M.D., D.D.S.*) Dental Office and Lab., Phila., 1901, xv, 161, port.—**McNamara** (M. C.) [1829-1901.] (Obituary.) *West. Dent. J.*, Kansas City, 1901, xv, 479.—**Marshall** (F. E.) Ethyl chloride as a general anæsthetic. *Liverpool M. Chir. J.*, 1901, xxi, 356-364.—**Marshall** (J. S.) Dentists in the U. S. Army. *Dental Reg.*, Cincin., 1901, lv, 550-561.—**Martin** (C.) Des moyens de corriger les déformations dues aux cicatrices vicieuses, par les appareils lourds ou à pression continue. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de stomatol. 63-76.—**Mathe** (L.) Pyorrhœa alveolaris kezelése. [The treatment of \* \* \*]. *Gyógyászat*, Budapest, 1901, xli, 598.—**Pótló megjegyzések a porcellán-koronáról szóló közleményemhez**. [Supplementary remarks on my communication on porcelain crowns.] *Ibid.*: 665.—**Merriman** (A. F.) jr. President's address. [Dentistry.] *Tr. Calif. Dent. Ass.*, San Jose, 1901, 9-26.—**Miller** (A.) Examen obligatoire des dents des enfants des écoles par des spécialistes. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de stomatol. 292-294.—**Miller** (W. D.) Disinfection of dental instruments by means of spirit of soap. *Dental Cosmos*, Phila., 1901, xliii, 1255-1257.—**Mintz** (W.) Ein Fall von primärer Parotistuberculose. *Deutsche Ztschr. f. Chir.*, Leipzig, 1901, lxi, 290-293.—**Moiroud**. Extraction dentaire sans douleur sous l'influence de la suggestion hypnotique chez un jeune homme de 17 ans. *Rev. de l'hypnot. et psychol. physiol.*, Par., 1901-2, xvi, 155.—**Moniz** (G.) A terceira denticão no homem. *Gaz. med. da Bahia*, 1901-2, 5. s., v, 113-133.—**Morestin** (H.) Tumeur salivaire parotidienne. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de chir. gen. 281-289.—**Nash** (H. S.) Periodontal diseases, with special reference to erythrosis. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de stomatol. 41-49.—**Natier** (M.) & A. Zünd Burgust. Vices de prononciation et anomalies de la dentition. *Rev. de stomatol.*, Par., 1901, viii, 446-455.—**Nicolescu**. Sur le choix des antiseptiques dans le traitement de la carie dentaire. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de stomatol., 10-22.—Sur le traitement de la stomatite ulcéro-membraneuse. *Ibid.*: 53-59.—Redressement des dents par le cordonnet. *Ibid.*: 282-291.—**Nolf** (P.) La pression osmotique de la salive sous-maxillaire du chien. *Acad. roy. de Belg. Bull. de la cl. d. sc.*, Brux., 1900, 960-977.—**Noyes** (E.) The management of children's teeth. *Dental Rev.*, Chicago, 1901, xv, 1059-1066.—**Palmieri** (A.) La glossoplegia nei pneumonici. *Cron. d. clin. med. di Genova*, 1901, vii, 297.—**Pearson** (C. E.) Open-faced cuspid crowns. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 549-551.—**Perrin** (L.) Les leucoplasies. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de dermatol. et de syph., 464-496.—**Perry** (S. G.) Some thoughts on the packing of gold. *Dental Cosmos*, Phila., 1901, xliii, 1241-1255.—**Piergili**. Traitement de la pyorrhœa alvéolaris. *Cong. internat. de méd. C. r.*, Par., 1900. Sect. de stomatol. 35-41.—**Pietkiewitz**. Des rayons X en stomatologie; communication et projections. *Ibid.*: 259-269, 1 pl.—**Platt** (F. L.) Some comparative measurements of natural and artificial teeth. *Tr. Calif. Dent. Ass.*, San Jose, 1901, 70-80.—**von Remagen** (H.) Kautschuk und Guttapercha. *Zahnärztl. Wchnbl.*, Hamb., 1901, xv, 123; 130.—**Ricketts** (B. M.) Patient with tri-facial neuralgia; ligature of left common carotid for relief. *Cincin. Lancet-Clinic*, 1901, n. s., xlvii, 508.—**Ritter** (P.) Die Aufgaben des Pflegepersonals in Krankenanstalten bezüglich der Mund- und Zahnpflege. *Zahnärztl. Wchnbl.*, Hamb., 1901, xv, 105.—Der üble Mundgeruch seine Ursachen und seine Behandlung. *J. f. Zahnhe.*, Berl., 1901, xvi, 173.—Ueber missglückte Fälle bei Kronen- und Brücken-Arbeiten. *Cor.-Bl. f. Zahnärzte*, Berl., 1901, xxx, 293-303.—**Roe** (W. J.) Neurectomy for tic douloureux; with report of five cases and exhibition of specimens removed. *Dental Cosmos*, Phila., 1901, xliii, 1267-1279.—**Roediger** (K.) Weiter Beiträge zur Statistik des Zungencarcinoms. *Beitr. z. klin. Chir.*, Tübing., 1901, xxxi, 389-424.—**Rubbrecht** (O.) Le chlorhydrate d'érythrophléine et l'eugénol dans le traitement de la sensibilité de la dentine. *Rev. de stomatol.*, Par., 1901, viii, 442-446.—**Samson** (W. S.) Unusual foreign body in pharynx. *Laryngoscope*, St. Louis, 1901, xi, 304.—**Samuel** (F. W.) Sarcoma of the jaw. *Am. Pract. & News*, Louisville, 1901, xxxii, 215-218.—**Saus-sine**. Sur une implantation anormale d'une incisive centrale supérieure diagnostiquée par les rayons X, traitement de la déviation. *Cong. internat. de méd. C. r.*,



- Par., 1900. Sect. de stomatol. 275-277.—**Sauves (E.)** International Dental Federation. Dental Rev., Chicago, 1901, xv, 1066-1069.—**Schoener.** Eine neue Vorrichtung zur Regulierung von unregelmässig stehenden Zähnen. Deutsche zahnärztl. Wehnschr., Wiesb., 1901, iv, 293.—**Schreiber (M.)** Ueber Zinn-Gold-Füllungen. *Ibid.*: 296-299.—**Schreier.** Demonstration clinique d'un mode de traitement des dents infectées par le potassium-sodium. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 303-305.—**Sébileau (P.)** Des différentes formes de la septicémie buccale. *Ibid.*: 131-145.—**Sheffield (L. T.)** [1854-1901.] (Obituary.) Dental Cosmos, Phila., 1901, xliii, 1349.—**Shoemaker (J. N.)** Leucoplakia. N. York M. J., 1901, lxxiv, 958-964.—**Sireday (A.) & C. Mantoux.** Stomatite ulcéro-membraneuse staphylopalatine avec bacilles fusiformes et spirilles de Vincent; albuminurie. Bull. et mém. Soc. méd. d. hôp. de Par., 1901, 3. s., xviii, 1093-1097.—**Smith (A. H.)** Dentine. Dental Rec., Lond., 1901, xxi, 486-488.—**Smith (B. H.)** Some æsthetic considerations in the treatment of teeth in the incisal region. Internat. Dent. J., Phila., 1901, xxii, 737-746, 1 pl. [Discussion], 756-763.—**Smith (W. A.)** Case of congenital cleft palate. Austral. Dent. J., Melbourne, 1901-2, v, 29.—**Sobel (J.)** Examination of the mouth in infancy and childhood. Med. News, N.Y., 1901, lxxix, 683-685.—**Söderberg (T.)** Notes on nervocidin. Dental Cosmos, Phila., 1901, xliii, 1265.—**Spence (S. J.)** A few more little pointers. Dental Brief, Phila., 1901, vi, 656.—**Stadtler (J. W.)** Suppurative inflammation of antrum of Highmore. Tr. Calif. Dent. Ass., San Jose, 1901, 99-103.—**zur Strassen (O.)** Zur Morphologie des Mundskelettes der Ophiuriden. Zool. Anz., Leipz., 1901, xxiv, 609-620.—**Strickland (L.)** Nirvanin. Tr. Calif. Dent. Ass., San Jose, 1901, 80-90.—**Suggett (A. A.)** Supplementary report on dental technics. Pacific Dent. Gaz., San Fran., 1901, ix, 737-740.—**Szabó (J.)** Die Lehre von der Dentitio difficilis. Ungar. med. Presse, Budapest, 1901, vi, 591-593.—*Also, abstr. transl.:* Orvosi hetil., Budapest, 1901, xlv, 535; 551.—**Talbot (E. S.)** Traitement de la pyorrhée alvéolo-dentaire. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 29-35.—**The intervention of therapeusis in anomalies of position and direction of the teeth.** *Ibid.*: 222-231.—**Interstitial gingivitis as a prominent obvious early symptom of autointoxication and drug poisoning.** Internat. Dent. J., Phila., 1901, xxii, 746-749.—**Taylor (W. J.)** Conservation of the deciduous teeth. Tr. Calif. Dent. Ass., San Jose, 1901, 49-60.—**Tellier (J.) & C. Tellier.** Contribution à l'étude de l'anesthésie dans les opérations sur les dents; de l'éthérisation à dose dentaire. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 79-106.—**Testelin.** De l'emploi du trioxyméthylène dans le traitement des caries dentaires du 3<sup>e</sup> et du 4<sup>e</sup> degré et de son association à l'orthoforme dans les cas compliqués d'accidents douloureux. *Ibid.*: 4-10.—**Thompson (A. H.)** Evolution of the premolars. Dental Digest, Chicago, 1901, vii, 871-879.—**Medical vs. technical training in dental education.** Dental Cosmos, Phila., 1901, xliii, 1257-1265.—**Thompson (G. H.)** Report of a case of sudden death during traction on the tongue. Regular M. Visitor, St. Louis, 1901, ii, 333.—**Trueman (W. H.)** First production of dental porcelain; a criticism. Items Interest, N. Y., 1901, xxiii, 808-810.—**Walden (E. C.)** The value of antiseptic mouthwashes. *Ibid.*: 802-808.—**Wallace (J. S.)** Heredity with special reference to the diminution in size of the human jaw. Dental Rec., Lond., 1901, xxi, 488-496.—**Warfield (C.)** Lateral pharyngitis. Tr. Texas M. Ass., Austin, 1901, 346-350.—**Weighton (H.)** A case of compound fracture of both jaws. Lancet, Lond., 1901, ii, 1120.—**Westmacott (F. H.)** On the advantages of ether and nitrous oxide over other anæsthetics for prolonged dental operations. J. Brit. Dent. Ass., Lond., 1901, xxii, 555-557.—**Wingrave (W.)** Tonsillotomy rash. J. Laryngol., Lond., 1901, xvi, 534.—**Wippert (A. G.)** Three obstinate cases of empyema of the maxillary antrum, cured with injections of solutions of nargol. Med. News, N. Y., 1901, lxxix, 734.—**Woods (R. H.)** Tumours of the pharynx from their clinical aspect. J. Laryngol., Lond., 1901, xvi, 546-559, 1 pl.—**Younger.** Traitement de la pyorrhée alvéolaire. Cong. internat. de méd. C. r., Par., 1900. Sect. de stomatol. 302.—**Zboril (C.)** Ein Beitrag zur Anfertigung der Kautschuk-Prothese. *Ibid.*: 22-28.—**Zikoff (V. M.)** [Excision of cancer of the tongue.] Khirurgia, Mosk., 1901, ix, 448-453.

## LIST OF UNITED STATES PATENTS PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING NOVEMBER, 1901.

- Nov.* 12.—No. 686,613, to CLEMENS HUBERTY. Dental articulator.  
 " 19.—No. 686,764, to CHARLES W. RICHARDS. Tooth-brush.  
 " 26.—No. 687,316, to RICHARD I. KING. Dental blow-pipe and lamp.

THE

# DENTAL COSMOS.

---

VOL. XLIV.      PHILADELPHIA, FEBRUARY, 1902.

---

No. 2.

## ORIGINAL COMMUNICATIONS.

---

### A STUDY IN BLEACHING TEETH.

BY N. S. HOFF, D.D.S., ANN ARBOR, MICH.

(Read at the third triennial Tri-state meeting at Indianapolis, June 4, 1901.)

THE subject of decolorizing teeth stained by what may be termed the natural or consequent causes of accident or carious destruction of the teeth is very well discussed in our text-books and by casual writers on the subject. But the removal of stains produced by chemical agents used in the antiseptic treatment of necrotic pulps and alveolar abscesses is not clearly set forth in any text-book, neither has it been clearly brought out in the discussions of this subject in dental societies or literature.

Probably the reason for this is that little attention has been given to differentiating specific methods designed to decolor this class of stains; or dentists are becoming more careful in the use of such antiseptics as are liable to produce this class of discolorations. It is, however, true that the most efficient antiseptics are those substances which tend to produce color change in tooth-structures when used in certain classes of teeth, or when their use is long continued.

For our present purpose it may only be necessary to state that teeth with thin, transparent enamel show this kind of pigmentation by contrast more pronouncedly than those do which have more substance and less pronounced refractive qualities. Structurally, some teeth respond more readily to this class of color-making reagents than others. The age of the tooth and its physical integrity are sufficiently important factors to be seriously considered when making applications of coloring medicines in the treatment of teeth which are exposed to view. This is, however, a subject of

itself,—important, but too long to discuss in this paper, although it has much to do with the matter here presented for consideration.

One need not confine his observations to his own practice to realize that many otherwise beautiful dentures have been seriously marred because a prominent tooth has changed color. And it seems that no adequate effort is being made either to prevent or correct this condition. A prominent dentist, to whom we remarked that we were much interested in bleaching such teeth, said that he had not had occasion to bleach a tooth for years. It may be that some of us are becoming accustomed to variegated teeth, and are losing our artistic sense of the truly esthetic. However this may be, we encounter these distasteful conditions with such frequency, and have experienced such difficulties in overcoming them, that we have felt that this was a very proper subject to bring before this convention for consideration.

The remedies generally employed in antiseptic treatment, and which leave such undesirable results, are the essential oils, eucalyptus, cloves, cassia, wintergreen, and others; carbolic acid, creasote, iodine compounds, hydronaphthol, tannic acid, and other similar drugs used in canal treatment.

In considering the methods employed to decolor teeth stained by such drugs it will be difficult to dissociate them from other accidental agencies which are liable to be associated, and which may materially modify the treatment used. To secure effective results in the shortest time, it is important that we first determine the cause of the stain and its character. This will influence the selection of the bleaching agent or process. But when a tooth is deeply stained and the condition is of long standing, the problem becomes complex indeed. If the stain is of recent occurrence and the cause be known, a proper chemical reagent may promptly effect the desired decoloration. In old stains the drug which caused the discoloration may long since have suffered decomposition, though its effects are still present, and perhaps in an unintelligible form demanding the most penetrating and destructive pigment solvents practicable.

In ordinary bleaching of teeth chemical reagents are employed on two principles. One is the removal of the pigmented structure by oxidation, the other decomposing it chemically and structurally by the process of reduction. It is questionable whether both methods may not be essentially oxidation processes. They certainly act so in bleaching organic stains. In both processes mechanical and physical detergent aids are also essential to complete results. Of bleaching agents, direct oxidizers are such as contain oxygen in loose combination which can be set free without injury to the tooth, and at pleasure. The peroxids are illustrations of this class. The reduction reagents are such as have the property of breaking up pigment compounds by chemical combinations or interchange of elements having stronger mutual affinities than those which prevail in the pigment compounds or the bleaching agent itself. The chlorine and sulfurous oxide methods are good illustrations, although in many cases these agents are supposed to act as indirect oxidizers.



The question which we propose you shall consider is, Which of these processes and agents are of the most value, and of practical application in decoloring teeth stained by the class of drugs above mentioned?

It may be of advantage to study this subject from its theoretical aspect, but should we attempt to do so we are likely to become disheartened, as the problem becomes so complicated that it is practically incapable of complete solution. The exact chemical nature of many of these substances used as antiseptics is not known, or, if known, is of such a complicated nature that it is difficult to determine what the reactions may be which take place when they are brought in contact with the tooth-structure in its normal condition. It is still more difficult to determine the nature of possible reactions when there is present in the tooth-structure the chemical detritus resulting from the necrotic processes. Notwithstanding these difficulties, successful methods of bleaching teeth will never be made practicable until some definite theoretical knowledge is obtained. This may be secured by laboratory research, but if it be not an actual deduction from successful clinical experience, it must necessarily be confirmed by such experience.

In order that we may get some basis, at least, for starting an investigation of this subject, we submit a brief study which we trust may be of some interest and value. That a comparative study of the powers of the well-known bleaching agents might be made, we selected a number of teeth which had been extracted for some time and were thoroughly dried. These were then cleansed of all carious substances, the apices of the roots cut off, and the pulp-canal and chamber reamed out so that no pulp-remnants were left. They were also thoroughly cleansed externally by mechanical means, and then with hot solutions of chlorinated soda. This left them practically clean and free from all organic contamination. They were then soaked for three days in the following solutions: Full strength solution of eucalyptol, old and dark oil of cloves, old oil of cassia, Black's "1, 2, 3" mixture and aristol, iodized phenol, carbolic acid ninety-five per cent. solution; old creasote, solution of iodoform and ether, alcohol solution of beta-naphthol, and a glycerin solution of tannic acid.

After removing them from the stains they were dried in the sun and by a gentle heat until all moisture had been driven off. The result, as may be seen by reference to the card, was a considerable discoloration in each case, varying from old gold in one to almost a purple in another.

One of each stain was then selected and cut into eight transverse sections, beginning at the apex of the root until the crown was reached. A proof set made up of one section of each of the ten stains was reserved for comparison, and the remainder were subjected to the decolorizing powers of the following bleaching agents: Twenty-five per cent. peroxid of hydrogen, three per cent. peroxid of hydrogen, sodium peroxid, benzozone, aluminum chlorid, chlorinated lime, and Kirk's sodium sulfite and boric acid mixture. These reagents are well known, with the exception of benzozone, which is

a new organic compound of the peroxid class. It is benzoyl-acetyl peroxid ( $C_6H_5COO_2COCH_3$ ), and is intended for disinfectant and antiseptic purposes. We selected it because of its being an organic peroxid. From a limited experience with it, we are satisfied that it possesses valuable properties as a bleaching agent, especially of organic stains. We have classed these agents into two divisions,—namely, the oxidizers and the reducers.

The oxidizers will include the four peroxids,—twenty-five per cent. pyrozone, three per cent. hydrogen peroxid, sodium peroxid, and the benzozone.

Dr. Kirk, in the "American Text-Book of Operative Dentistry," states that aluminum chlorid, as used in the Harlan process, has no bleaching properties, and that peroxid of hydrogen used in the process is the only effective agent, the aluminum chlorid serving only to set free the oxygen expeditiously. While this statement as to the reaction which occurs is undoubtedly true in the main, there is a strongly increased acid condition developed in the use of this process, which would indicate a chemical as well as a physical reaction, with the probable formation of hydrochloric acid. This acid would materially influence the bleaching process by its detergent action on both the mineral and organic stains and tissues. In our experience it seems to have had some advantage over the same strength solution of peroxid alone, and we are therefore inclined to classify it with the reduction agents.

The bleaching of the ten different stainings was under as nearly similar conditions as it was practicable to devise. Each set of sections was subjected to the several respective reagents for twenty-four hours at room temperature, about 60° F. Of course some of the reagents became temporarily heated while being mixed in the test-tubes. After twenty-four hours they were kept at a temperature of 100° F. for one hour, and then removed from the bleaching solutions and repeatedly washed in several changes of distilled water.

They were carefully dried for several days in the sunlight, and tabulated in their respective places on the card, where the result may be studied. As might have been expected, the twenty-five per cent. pyrozone makes the most creditable showing as a whole,—bleaching all the stains satisfactorily except the iodine and creasote. These two stains were the most profound, and did not yield to the oxidizing influence of the pyrozone so well as they did to the alkaline sodium peroxid.

The sodium peroxid produced almost as satisfactory bleaching as the pyrozone; none of the specimens were as clear as some of the pyrozone, but all were very materially affected. The sulfuric acid used to liberate the oxygen in the process seems to have very materially affected the inorganic part of the sections. Such effects on the teeth in the mouth would necessarily contraindicate its use. It is unquestionably a great solvent of the organic structures.

The benzozone stands third as to effectiveness, so far as the clearness of results are concerned. It produced nearly, if not quite, as satisfactory bleaching as the sodium peroxid, and although this

agent gave a decided acid reaction while bleaching, the sections do not show any destructive acid effects. The acids in this substance are organic and weak, and consequently would not affect the inorganic tooth-tissues. This agent has the advantage over the pyrozone and sodium peroxid of not being readily soluble in water. It is soluble only to a fraction of one per cent. Consequently it does not act promptly, but continuously, so long as any undissolved benzozone is present. When a supersaturated solution is used, as was done in this case, or when the solution is made with heat, the bleaching continues afterward, though not so intensely as with the twenty-five per cent. pyrozone, for a longer period than with any of the other bleachers. We found that there were traces of it in the fourth water used to wash out the bleaching agent. This quality would indicate that this particular agent had promise of being a very effective bleacher of organic stains, because it can be used with safety and the bleaching may be done more slowly than with the other peroxids, which are so easily decomposed when brought in contact with agents which manifest an unusual affinity for oxygen.

The three per cent. peroxid shows comparatively slight bleaching properties, not sufficient to make it of any great value when used by this method.

The aluminum chlorid does not make a very favorable showing; it was only slightly more effective than the three per cent. peroxid. It produced its best work on the iodoform and the tannic acid stains. The chlorinated lime bleaching was about the same in degree as that of aluminum chlorid. It seemed to be slightly more effective in bleaching eucalyptol and iodoform stains.

The sodium sulfite and boric acid mixture was the least effective of all the bleachers used. It does not seem to have any special affinity for the essential oils, creasote, or naphthol stains; the others were only moderately bleached.

It is probably true that the methods used in making these experiments do not justify the results, as they are not practicable without material modifications in practice; and it may be that some of the bleachers would be more effective if used under other conditions. Again, the staining was artificially done and may have been more profound than is likely to be met in actual practice. Nevertheless, the conditions were similar in all respects for each bleacher, and the results will undoubtedly serve as a basis for judgment in selecting a bleacher for the several stains.

It certainly demonstrates one fact very significantly, and that is that bleaching of this class of discolored teeth cannot be done as effectively by chemical reagents which act by decomposing the stain on the substitution theory, as it can by the oxidizing reagents or those which act at least through molecular oxygen, probably in the form of ozone, which effectively destroys the molecular integrity of the pigment or absorbs it.

We have no doubt this conclusion will be supported also by clinical evidence. It certainly simplifies the question of selecting a proper method, as it in great measure eliminates all efforts to



explain all bleaching processes on the theory of atomic disintegration. Should further research prove that the peroxids are especially adapted to bleaching this class of stains, it will simplify technical details.

Should the pigment be most easily decomposed by an organic peroxid, benzone may be used in such way as shall best utilize its peculiarities. Should it be a mixed or inorganic compound, the pyrozone bleacher should produce the most effective results. Should it be a pigment more soluble in the alkalies, sodium peroxid will be most satisfactory.

The principle of most expeditiously utilizing the various peroxid preparations and the devising of such methods as shall most effectively utilize all the virtues practicable of each drug or class may be left to the ingenuity of the practitioner.

---

## PORCELAIN AS AN ART IN CROWN-WORK.

BY F. J. CAPON, D.D.S., M.D.S., TORONTO, CANADA.

(Read at the third triennial Tri-state meeting at Indianapolis, June 4, 1901.)

**P**ORCELAIN is quite recognized as a substance which has come to our aid as an ideal material for the replacement of the lost crowns of teeth in conspicuous places; it has the required strength, and when applied with a true sense of art gives results that please the operator and the patient and deceive the public.

Crown-work has been classed so long with the mechanical part of dentistry that the true artistic side has received but little attention, and we are in a fair way to lose our identity as artists and sculptors. Manipulative art being the basis of true dentistry, it should also be the expression of a dentist's joy in his work.

A man who is lacking in esthetic taste is wanting in appreciation of the harmonies of nature. Innate love of art is predominant to a greater or less degree in the gentleman born, and it seems to be less pronounced to-day than a few generations ago. If as much attention were paid to cultivating the finer instincts in man as is given to the breeding of high-class animals, there would be a greater evidence of artistic taste in all the walks of life, and I feel sure that our profession would have a larger ratio of men with a finer, a kindlier and truer esthetic insight.

I presume the greed for money has done much to dull the delicate and ennobling side of those to whom we looked to do credit to the profession; the dignity of our calling has suffered in consequence of their daily hustle and bustle. So artistic porcelain work has often to give way, for quick results, to the gold cap and factory-made crowns.

All dentists are not dentists, just as all artists are not artists; and it is in about the proportion that we find the true artist that the first-named class, or dentists, are capable of producing results that their vocation demands.

Many dentists are endowed with more or less mechanical skill, and doubtless improve by practice until they are able to discharge their duties and make money; but, outside of that, any ingenuity or artistic skill is not in their line.

The indication for a crown of any kind is that the walls of the tooth are so broken down that they give no retentive strength to filling and no assurance of success to that mode of treatment,—*i.e.*, it has gone beyond repair. This matter of determining just when a tooth is ready for crowning is a much-mooted point, and doubtless is stretched, in a certain line of practice, to suit the operator; in fact crowning on the slightest pretense is practiced by the horde that make the dollar their special end. Vanity often plays a prominent part, and for such cause anterior teeth with slight disfigurement are frequently sacrificed for artificial ones to improve appearances. One should hardly give way to this practice without sufficient reasons to warrant the change. There is no argument strong enough to convince me that an artificial crown fully takes the place of a reasonably good natural one. When one tears down or mutilates a natural tooth, it is the beginning of the end, no matter how distant that end may be.

Porcelain is especially indicated for crowning any of the incisors, the canines and bicuspid, and often to good advantage the molars.

In crown-work, as in all other branches of dentistry, judgment and discrimination should be most important factors. Porcelain is a vitrified mass more or less friable, according to its bulk; and there are cases presented to us for crowning that severely tax the best judgment to get the desired effect.

There are certain requirements for all crowns,—*viz.*, strength, appearance, occlusion, approximal contour with contact, and general fit. If porcelain can meet these requirements, it is the material to use; but if the closeness of the bite will not admit of sufficient bulk of material to give strength, some other way or means has to be thought out. Such cases may be termed contraindications for porcelain, but there are comparatively few cases in the ten anterior teeth in which porcelain cannot fill the full bill of requirements. It is quite the "ideal" material for conspicuous teeth, as the esthetic appearance is a prominent requirement, and nature can be imitated to a degree governed entirely by the operator's ability as an artist. This perfect imitation is only a rare possibility when metal backings are used, as it deprives the crown of its translucency and the facing depends for its attachment on two little pins which are often invisibly checked around their heads in soldering, and are liable to be easily forced off if not protected by gold tips that are unsightly and by no means artistic.

Mineral paints aid us greatly in imitation of peculiar shades which are not at hand or to be had from a limited selection. At times one feels that an exact match has been made, but when finished and placed alongside of its near neighbor a contrast is noticeable, and the shade requires changing; this can be very satisfactorily done by burning in the proper shade with these paints. With a backed and soldered crown, while the shade is more often disappointing, the changing of it is out of the question.

I would call attention to the importance of the interdental space, which is much neglected in crown-work, but which should receive as much care as it does in filling operations.

Too many crowns are made, whether gold or porcelain, that do not pretend to fill the interdental space, resulting in great annoyance to the wearer; and the poorly fitting band which generally accompanies these carelessly made affairs adds still more to the discomfort of the poor victim by being a place of retention to fibers of food. The crown's being straight-sided invites this compacting of food into its meshes, so that instead of having a beautiful pink gum tissue closely adherent at the necks of the artificial teeth, with circulation perfect, with physiological action complete, always protected by the pronounced overarch which nature provides, the festoons of the gum become congested, the soft tissue by the engorgement sometimes fills the false space, no part of which can be touched without profuse bleeding; brushing becomes a painful task, is often neglected, and may even be abandoned. This manner of replacement tends to bring about finally a wholesale loss by disease, instead of meeting the original desire to save these useful organs.

For any of the six anterior teeth, and more particularly if the patient be a woman, it is especially desirable that the festoon of the gums be kept in a perfectly healthy condition, so that no one may detect the artificiality; then a semi- is indicated, rather than an entire band, which is very apt to interfere with the nice results required at the labio-gingival margin by causing irritation, resulting in recession or congestion. We are forced to admit that bands of the neatest character are more or less liable to this condition. A band does not strengthen the porcelain. It prevents the root from fracture, which no doubt is a very important factor; but I think a compromise might be made, by using a semi-band, with more artistic results. For many years this style of partial banding has given me great satisfaction, and I might say I have never had one return with a fractured root. Doubtless a fracture from a Logan crown has come under your notice, where possibly the operator had sacrificed a great amount of root to get a canal to suit the position of the crown, which only fits approximately, depending entirely on the dowel for security. Yet taking the number of Logan crowns that are set (carelessly or otherwise) in a year, if we were able to strike an average of their tolerable success it would no doubt astonish us.

The root preparation for a crown of *any* style is an important step, and many failures may be attributed to improper preparation. The face of the root is to be ground to a wedge shape, following the gum line without wounding the soft tissues. Remove the remaining ledge of enamel, and with an Evans trimmer (Fig. 1) cut the edges of the root just under the free margin, making the face of the root more of a cone than a wedge; enlarge the canal to receive a tapering square iridio-platinum wire. The depth of the canal is marked on it, then it is pushed through a disk of platinum (No. 35, B. & S. gauge) a little larger than the face of the root, and soldered at the mark with pure gold or platinum solder. With a flat-faced



burnisher (Fig. 2), work the platinum disk down to the face of the root, carrying the burnisher well along the edges, which will be defined on the platinum; remove and trim away the surplus, leaving sufficient on the palatal half to form the band, which is turned approximately to the line of the root with a fine-nosed pair of pliers. Replace it on the root and burnish it again until the platinum lies snugly to the face of the root and the banded portion closely in position, as shown by Fig. 3.

If it is found to be impossible to finish the crown at the same sitting, a bite and an impression in plaster may be taken. The facing should be selected before the patient is dismissed, so that a perfect shade can be chosen. These facings should be procured from the highest-grade makers, as they will stand the required heat in baking without any apparent change in color.

In order that the patient need not be subjected to any temporary disfigurement, and to keep the gum from creeping over the edge of the root, a temporary crown can be quickly adjusted by putting a piece of screw-posting into the canal, having made a slot across the end of the screw for its easy removal. A Bonwill crown can be adjusted with temporary stopping, or a plate tooth can be used by bending the pins around the screw and pressing in cement or temporary stopping to fill up the palatal space.

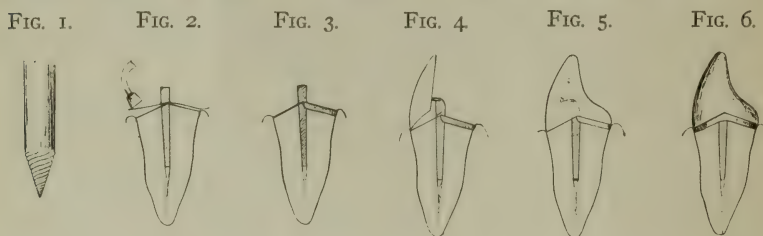
The facing for the crown having been selected, it is ground to nicely fit the labial surface and stand in its proper relation; the pins are bent to touch the head of the post, and the facing is kept in position with hard wax. It is then removed from the cast, invested, and soldered with the minimum amount of pure gold, or, better, platinum solder. (Fig. 4.) If a surplus is used in soldering, it will cause porosity in the porcelain, which is detrimental to the strength, appearance, and finish of the crown. This necessitates that in all porcelain work the metal parts to be united should have absolute contact, and any surplus end of dowel or pin should be ground off and made round or void of sharp corners.

High-grade bodies should also be used in crown-work, as the higher the fusing-point of the body the stronger the crown. The great amount of glass bodies used by those seeking low fusing-point has done much to depreciate artistic work, as these bodies have caused a succession of failures in both crown- and inlay work, discouraging many beginners, although the expert with the same materials would have fared no better.

I was pleased to note the experiments in a paper read two or three years ago by Dr. Nyman, of Chicago, making strength tests of the different bodies, which clearly proved that the high-grade bodies resisted crushing power higher than the masticating strain of the human jaws. Still we must bear in mind that the stress of the jaws is not always directly exerted, and a crown should be designed accordingly; but at the same time the crown, whether gold or porcelain, should be able to take the full work and be comfortable, or otherwise that portion of the mouth will become lame and naturally be favored, allowing the surroundings to become unhealthy.

The final step, the work of applying the porcelain body, should

be done with clean surroundings. A fresh towel or white paper should be spread upon the bench or table, and any work going on in the laboratory that would create a dust should cease. These precautions will insure against minute particles of carbon settling and leaving tiny black specks on the finished porcelain surface. I will mention Close's as being one of the higher-grade bodies that has stood the test for years with satisfaction, yet if our furnaces could stand the temperature even more strength and life-like appearance could be got if "block" bodies were used. There is an objection to Close's being rather coarsely ground, which somewhat interferes with fine carving; but this can be easily improved by pulverizing in a mortar, which will also improve the finished surface. Another slight drawback is that it is put on the market in one shade only, but, should a contrast between the facing and the body be noticeable, the final baking might be changed in color by mixing in Whiteley or Consolidated shades; this will not impair the strength, but improves the finished surface. By holding the crown (to be) in tweezers or a pin-vise, the porcelain body is thoroughly worked



down into every crevice; then by rapping the tweezers the moisture is brought to the surface and taken up by old linen, bibulous, or blotting paper. After this has been thoroughly done it has the proper consistence for carving. Sufficient body should be applied to allow for this and for the shrinkage, it being necessary to hold the contour and shape of the crown in the first baking.

Now the work is ready to be placed at the mouth of the muffle, and gradually heated up until it can be put completely into the furnace and subjected to the full degree of heat. After cooling in a tempering oven it can be adjusted in the mouth or on the model and properly occluded, noting where contour or cusps are necessary, which are built up and carved in the body, dried again, and placed in the furnace for the final baking. As a rule two bakings are found sufficient for this class of work, but sometimes a flaw or mistake will necessitate a third baking. The crown is finally finished by sandpapering the edges and doing any necessary polishing. Fig. 5 represents the finished appearance of the crown with the palatal contour extending well over the band, which gives it rigidity and forms a slight protection to the gingival margin.

Sometimes it is difficult to obtain the exact shape of the facing to correspond with the natural one; then there are no means left other than to grind the lustrous face, which I do not hesitate to do rather than have an oddity; and I find that it proves very satisfactory, as

quite often the highly glossed surface needs toning down to harmonize with the adjoining teeth. Almost any make of tooth can be ground and repolished to a more life-like appearance than before. Every face on the sample case has been ground and polished.

The crown just described can have a full band or cap (Fig. 6) if the case demands it. No better crown could be suggested for a man, but for a woman the half-band is ample for all the requirements, with a more esthetic appearance; and after many years I have no reason to regret their use where properly indicated.

The *tube crown* serves us most usefully and artistically, either in cases of fracture of the root or of a broken crown where the pin is left standing and well seated in hard cement, aged and tested. You will agree with me that it is a difficult undertaking to attempt its removal, and to do so a drill is called into play; and this is more than liable to enlarge the canal and weaken the root, with a chance of puncture. It would have been much better to have used the already standing dowel as a means of retention for a new crown.

In those roots that are badly decayed below the gum-margin, and possibly filled with fungous growth, one may grasp at the remains to build on a crown for esthetic effect alone. When these cases present themselves, there has been such an extensive loss of tooth-substance that hypertrophied gum overhangs the edges of a root very extensively invaded by caries. In such cases the root form is to be restored sufficiently to furnish a good base. It is often necessary to cut out the fungous growth, and, after applying powerful antiseptics to the gum and the cavity of the root, temporary stopping is to be packed in to free the interior of the root and its edges from the overlying gum. The root is brought to a condition of assured health, and the apex of the canal sealed.

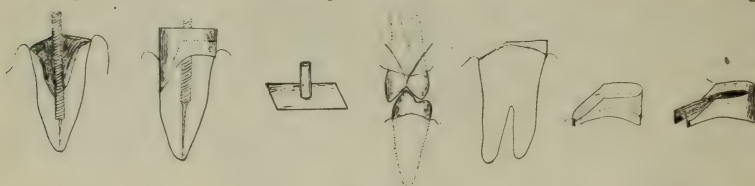
It is now required to restore the root form by means of a rigid and insoluble material. Good amalgam is best adapted for this purpose. If the edges are easily accessible, the root can be dried, the canal cleared and tapped for the reception of a gold screw-post. After placing a small piece of cement on its extremity it is screwed into position. The root is given an undercut if possible to aid in retaining the amalgam, which is packed about the pin over the face of the root to form a slight cone (Fig. 7). If the root is fractured or decayed considerably below, then a matrix with an apron to take in the extent of the fracture is required, in which the amalgam is to be packed. The flow of blood is invariably bothersome at this point, but can be nicely controlled by using adrenalin chlorid as a styptic and cocain as an anesthetic. The size of the band or tube matrix can be obtained by packing a small cylinder of moldine over the root face, and while the moldine is in position a small impression-tray filled with the same material is used to secure and withdraw the mass covering the root face. Into this impression a fusible metal cast is run, on which the matrix of German silver is adjusted, fitting the root accurately. If the root is that of a bicuspid or a molar on which a collar crown is to be placed, the matrix is made deep enough to grasp the end of the root firmly and to extend about one-eighth of an inch above the margin of the gum. (Fig.



8.) If a tube crown is to be used, it is finished to the gum margin, leaving the screw-post projecting, as in Fig. 7. After twenty-four hours the matrix can be removed by splitting it with a hatchet excavator, and Rhein files passed down between the gum to remove any rough edges of amalgam. The matrix in some cases is made of thin platinum and allowed to remain, covering the amalgam mass. In either case the external edge of amalgam can be ground down to suit the kind of crown desired.

To obtain the tube for the crown, wrap a piece of thin platinum around a piece of similar posting, round or square, remove the tube and place it on the dowel-head; with a disk of soft platinum, No. 35, somewhat larger than the face of the root, make a hole in the center of it and place it over the tube which is in position on the dowel-head. With a pair of tweezers, pinch the torn flanging edges of the hole against the tube, remove the tube and disk together, and solder with a minimum amount of platinum solder. Now there will be a tube and disk as in Fig. 9, instead of the dowel and disk as in Fig. 2. The surplus tubing is bitten off at the length of the screw-post, and the remaining procedure is the same as for the former crown.

FIG. 7.      FIG. 8.      FIG. 9.      FIG. 10.      FIG. 11.      FIG. 12.      FIG. 13.



Bicuspid and molars require a crown that will withstand the stress of mastication; the former in my experience are the most difficult to contend with, more especially when the bite is short with the lower cusp occluding in a deep sulcus. (Fig. 10.) This condition gives but slight indication for an all-porcelain crown, especially if the retention is wholly dependent on a dowel which greatly weakens the already weak portion of the crown. The natural bicuspid is prone to fracture more than any other tooth by reason of a deep sulcus and a long interlocking cusp. All manufactured (ready-made) crowns for bicuspid either have a dowel-head or a hole, which is placed in the weakest part of the crown, rendering them almost out of the question for this particular case. To overcome this difficulty, I do not think it wise to make a large sacrifice of tooth-tissue below the gum in order that a greater body of porcelain can be got for strength; this would cause irritation and lameness, with a shirking of its duty.

The "cup" crown, which is made with or without a dowel, as the case demands, will meet many of these cases. The root is prepared as for any banded crown, but when no dowel is used a little more tooth-tissue should be left for retention at the palatal aspect. (Fig. 11.)

A platinum band (which for porcelain should always be beveled and lapped at the joint) with plenty of width is made to fit the root accurately, and festooned so that it will not lacerate. While in position on the root, scratch with a pointed instrument on the inside of the platinum band the line of the root; also the gum line on the outside of band. (Fig. 12.) With a pair of fine-pointed scissors cut the buccal half of the band to the line of the gum, place the band on a piece of platinum, No. 30, mark the shape of the band on it for the palatal two-thirds, trim and file accurately to the mark, and fit it to the line on the band. Now tack it in position with platinum solder, after which the remaining part of the apron may be pressed down to the buccal portion of the band and the solder complete its course around the band. (Fig. 13.) Trim off any surplus and file the buccal edge rounding, which allows of a better extension of porcelain on the band. If a dowel is to be used, it can be adjusted and soldered in its proper relation at this stage. The extended portion of the band is contoured if necessary, and the crown proceeded with along the same line as the former ones. If a dowel is used, the pins of the facing are soldered to it; if no dowel, the pins are bent down and soldered to the cap or floor of cup. (Fig. 14.)

The band projecting above the face of the root forms a "cup" in which the porcelain has its base, and gives to it the additional strength required for mastication, so that the liability of fracture of the porcelain is reduced to a minimum. The facings of these crowns give little cause for anxiety, as they are made of "block" body, the entire surface of which is etched to the body of the crown. It is soldered as well. This style of porcelain crown can be used to serve as abutments of gold bridges, as they have a soldering surface. I think the general impression that an all-porcelain crown is not as strong as those that are made by soldering gold to a porcelain face is erroneous. In keeping a close observation and record of porcelain crowns that are taking their proper ratio of strain in mastication it is encouraging to note but a small percentage of failures. No doubt many are far from flawless, or faultless, as years of experience have taught and brought changes of ideas and manipulation.

The "jacket" crown is a most useful and artistic one. It is especially adapted to *peg-shaped* laterals; also to incisors, canines, or bicuspid that have gone beyond repair by filling, the pulp being intact and not necessarily receded, and in cases where extensive erosion has demolished the greater part of the tooth. In September, 1900, DENTAL COSMOS, pp. 837, 838, can be seen diagrams showing their special use in wholesale crowning. These jackets have proved themselves to be very durable, and they have an advantage in case of death of the pulp in permitting entrance to the pulp-chamber without removing or injuring the crown. In case of breakage of the face the crown can be easily removed and a new face quickly replaced.

In preparing the remaining natural crown for reception of one of these jackets it is as necessary to take away any contoured por-

tions as for any other crown, and the more perfectly the remaining portion of the tooth is made parallel the better the adaptation of the artificial crown to the neck. The labial or buccal aspect of the tooth to be crowned is ground sloping to the gum-margin, leaving sufficient covering of dentin to act as a protection to the pulp, or sufficient to allow for the thickness of a porcelain veneer face; at the labial edge the remaining ledge of enamel is removed, and the edge of the root trimmed well under the free margin. If necessary, the palatal aspect may be ground to allow for the thickness of the platinum. The mesial and distal aspects being already broken down by large cavities of decay, little remains for trimming. The incisive edge is shortened to allow for material. (Fig. 15.)

A wire measurement is taken and a wide band or *tube* is made to fit the neck (platinum, No. 32, B. & S. gauge), wide enough to take in the full length of the remaining coronal portion. The platinum tube must have a joint that is beveled and lapped, as a butted joint will draw apart under the high heat. Now, with the tube festooned and fitted into position, the palatal slope of the adjoining teeth and

FIG. 14.

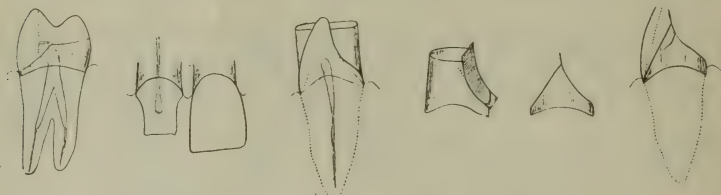
FIG. 15.

FIG. 16.

FIG. 17.

FIG. 18.

FIG. 19.



the gum-margin are scratched with a sharp instrument on the outside of the band. On the inside, mark the labial line of the ground surface (Fig. 16), and with a fine-pointed pair of scissors cut out the palatal line on the tube and solder on it another piece of platinum, which forms the palatal side of the jacket. (Fig. 17.) If a heavy, close bite, pure platino-iridium may be used instead of platinum. The surplus is cut away, and the round labial surface of the tube is put to the face of a corundum stone on the lathe and ground to the marked line on the inside of the tube; with careful grinding and no forcing, a film of platinum will remain stretched across and attached from side to side. The piece is now annealed and placed in position on the tooth, the film is burnished down on the labial surface and tucked into any cavities of the tooth that show themselves, which will give attachment for the porcelain body. It is now removed from the tooth and body applied to cover the labial surface only; this is placed in the furnace and biscuited, which makes it more rigid in handling, and also gives the facing better attachment and lessens the shrinkage in the next baking, the band or matrix (if you like) presenting an appearance as shown in Fig. 18.

The porcelain veneer is selected. These veneers are made by the manufacturers for this purpose, but a Justi or Consolidate tooth will answer for a veneer if they are ground until all the platinum



pin is gone. If working in the mouth, it is well to have the body mixed with water made somewhat mucilaginous by gum tragacanth, which will aid in keeping the porcelain veneer in position while removing the matrix from the mouth. It can now be handled with the tweezers and more body added to form contours, etc., as one desires. The crown is now placed at the mouth of the muffle and carefully dried out, allowing the vestige of tragacanth or saliva to burn out before attempting to fuse, as the carbon would gas the work and render the facing liable to jump from its position. After the necessary sandpapering and polishing it is ready for setting in the mouth. (Fig. 19.) The adjusting of it should be done without any forcing, as the delicate edges would be liable to chip or fracture.

The sample case bears a porcelain molar crown that is attached to the root by amalgam with no dowel or pin. There are a few odd cases where this style of adaptation is very useful. Any that I have used have given splendid satisfaction, and some were put in the mouth twelve years ago. The root is ground down to the gum-margin with good retention for amalgam, for which the impression is taken with moldine, and a Melotte's cast made. Upon this a Logan crown is fairly accurately fitted, conforming to the proper occlusion. In the depression that is left in the crown after grinding apply a little Close's body and bring to a slight biscuit, which will leave a rough surface. Upon this surface paint rather a heavy coating of ("china decorating") mat gold. The crown is now placed before the muffle of the furnace and thoroughly dried, when it is placed in the muffle until fired. Amalgam that is rather soft is worked or burnished into the gold surface of the crown, which is now ready to be set with amalgam on the root.

---

## INTERNATIONAL ANATOMICAL DENTAL NOMENCLATURE, WITH SYMBOLS TO BE USED IN FORMULAE.

BY FANEUIL D. WEISSE, M.D.,

PROFESSOR OF ANATOMY, SURGICAL PATHOLOGY, AND ORAL SURGERY, NEW YORK  
COLLEGE OF DENTISTRY.

**C**HEMISTRY has benefited materially by the introduction of the use of symbols of the chemical elements, which are used to express by formulæ the composition of compounds and the qualitative changes that occur by chemical affinity. Symbols are to-day the international alphabet and formulæ the international language of chemistry. Students of chemistry of all nationalities readily learn to express themselves by formulæ to the exclusion of words.

The anatomical dental nomenclature here advanced consists of seven general, five special, and four qualifying terms, and the names of the temporary and permanent teeth, together with symbols for the terms and designative symbol letters and designative symbol

figures for the names of the teeth. The terms and names are Latin, that they may have an international value.

### GENERAL TERMS.

Names of the parts of a tooth:

	Symbols.
Corona.....	C
Cervix.....	Cv
Radix.....	R
Apex.....	A
Pulpa.....	P
Cavitas pulpæ.....	Cp
Canalis.....	Cn

### SPECIAL TERMS.

Names of the surfaces of a tooth *in situ*:

Opponens, the surface put in opposition.....	O
Exterior, the outer arch-surface.....	E
Interior, the inner arch-surface.....	I
Internus, the arch-surface toward the median line.....	In
Externus, the arch-surface from the median line.....	Ex

### QUALIFYING TERMS.

(A) Designating the side of the median line at which a tooth is located:

Dexter.....	D
Sinister.....	S

(B) Indicating the arch in which a tooth is located:

Superior.....	Sp
Inferior.....	If

(C) Names of the temporary and permanent teeth at each side of the median line in both arches:

#### (a) *Dentes temporarii.*

Incisor centralis .....	a
Incisor lateralis .....	b
Cuspidatus .....	c
Molaris primus .....	d
Molaris secundus .....	e

#### (b) *Dentes permanentes.*

Incisor centralis .....	1
Incisor lateralis .....	2
Cuspidatus .....	3
Bicuspidatus primus .....	4
Bicuspidatus secundus .....	5
Molaris primus .....	6
Molaris secundus .....	7
Molaris tertius .....	8

A formula of four symbols—three of above symbols and one of the designative symbol letters or figures—locates a *simplex* pathological condition, cavity, or filling on the crown of a tooth, and gives the position and name of the tooth; the addition of one or more symbols affords a formula for a *complex* pathological condition, cavity, or filling.

An argument in favor of this nomenclature is that the student, by his study of anatomy, is prepared to understand its terms as applied to the teeth.

The above symbols in formulæ are applicable to dental pathology, operative dentistry, operative technics, prosthetic dentistry, prosthetic technics, and dental anatomy.

As an anatomist I make this contribution. If it serves no other end than to lead to the satisfying of a most essential need of both teachers and students of dentistry of all nationalities, that of simplifying and unifying dental nomenclature, and the use of symbols as the international alphabet and formulæ as the international language of dental nomenclature, it will have fulfilled a mission.

#### PRACTICAL APPLICATION OF FORMULÆ TO DENTAL PATHOLOGY AND OPERATIVE DENTISTRY.

Pathological conditions, cavities, and fillings of the teeth are divided into *simplex*—those which involve one surface, and *complex*—those which involve two or more surfaces.

Table I.—*Formulæ locating a simplex pathological condition, cavity, or filling.*

##### (a) Of superior arch:

O S Sp or O D Sp	(a, b, c, d, or e)	or	(1, 2, 3, 4, 5, 6, 7, or 8);
E S Sp or E D Sp	"	"	"
I S Sp or I D Sp	"	"	"
In S Sp or In D Sp	"	"	"
Ex S Sp or Ex D Sp	"	"	"

##### (b) Of inferior arch:

O S If or O D If	(a, b, c, d, or e)	or	(1, 2, 3, 4, 5, 6, 7, or 8);
E S If or E D If	"	"	"
I S If or I D If	"	"	"
In S If or In D If	"	"	"
Ex S If or Ex D If	"	"	"

The formulæ of this table are to be read as follows: O, E, I, In, or Ex locates the affected surface of the tooth; D or S indicates the side of the median line where the tooth is; Sp or If gives the arch-lodgment of the tooth; one of the designative symbol letters (a, b, c, d, or e) names the temporary, and one of the designative symbol figures (1, 2, 3, 4, 5, 6, 7, or 8) names the permanent tooth involved.

Table II.—*Formulæ locating a complex pathological condition, cavity, or filling involving two surfaces.*

##### (a) Of superior arch:

E O S Sp or E O D Sp	(a, b, c, d, or e)	or	(1, 2, 3, 4, 5, 6, 7, or 8);
I O S Sp or I O D Sp	"	"	"
In O S If or In O D If	"	"	"
Ex O S Sp or Ex O D Sp	"	"	"
E In S Sp or E In D Sp	"	"	"
E Ex S Sp or E Ex D Sp	"	"	"
I In S Sp or I In D Sp	"	"	"
I Ex S Sp or I Ex D Sp	"	"	"



## (b) Of inferior arch:

E O S If or E O D If	(a, b, c, d, or e)	or	(1, 2, 3, 4, 5, 6, 7, or 8);
I O S If or I O D If	"	"	"
In O S If or In O D If	"	"	"
Ex O S If or Ex O D If	"	"	"
E In S If or E In D If	"	"	"
E Ex S If or E Ex D If	"	"	"
I In S If or I In D If	"	"	"
I Ex S If or I Ex D If	"	"	"

The formulæ of this table are to be read as follows: E O, I O, In O, Ex O, E In, E Ex, I In, or I Ex locate the affected surfaces of the tooth; D or S, Sp or If (a, b, c, d, or e) and (1, 2, 3, 4, 5, 6, 7, or 8) are to be read as explained for formulæ of Table I.

*Table III.—Formulæ locating a complex pathological condition, cavity, or filling involving three surfaces.*

## (a) Of superior arch:

E In O S Sp or E In O D Sp	(a, b, c, d, or e)	or	(1, 2, 3, 4, 5, 6, 7, or 8);
E Ex O S Sp or E Ex O D Sp	"	"	"
I In O S Sp or I In O D Sp	"	"	"
I Ex O S Sp or I Ex O D Sp	"	"	"
E O I S Sp or E O I D Sp	"	"	"
In O Ex S Sp or In O Ex D Sp	"	"	"
E In I S Sp or E In I D Sp	"	"	"
E Ex I S Sp or E Ex I D Sp	"	"	"

## (b) Of inferior arch:

E In O S If or E In O D If	(a, b, c, d, or e)	or	(1, 2, 3, 4, 5, 6, 7, or 8);
E Ex O S If or E Ex O D If	"	"	"
I In O S If or I In O D If	"	"	"
I Ex O S If or I Ex O D If	"	"	"
E O I S If or E O I D If	"	"	"
In O Ex S If or In O Ex D If	"	"	"
E In I S If or E In I D If	"	"	"
E Ex I S If or E Ex I D If	"	"	"

The formulæ of this table are to be read as follows: E In O, E Ex O, I In O, I Ex O, E O I, In O Ex, E In I, or E Ex I locate the affected surfaces of the tooth; D or S, Sp or If (a, b, c, d, or e) and (1, 2, 3, 4, 5, 6, 7, or 8) are to be read as explained for formulæ of Table I.

Unless otherwise specified, a formula refers to the C of a tooth. The addition to one of the above formulæ, except those involving an O surface, of one of the two symbols Cv or R locates the pathological condition, cavity, or filling at the cervix or radix of the tooth, respectively,—viz, E S Sp 2 Cv; In D If 5 Cv; E In D Sp 3 R; I Ex S If 6 R, etc., etc.

## SEPTIC GINGIVAL CATARRH: DISEASE OF THE GUM BORDERS AND SOCKETS OF THE TEETH.

BY C. M. WRIGHT, A.M., D.D.S., CINCINNATI.

(Read at the third triennial Tri-state meeting at Indianapolis, June 4, 1901.)

THE subject which I have chosen for this essay has been referred to in medical literature for hundreds of years, and for the past quarter of a century has been the special study of many of the brightest minds in our profession. Tuberculosis, diphtheria, and appendicitis have received scarcely more devoted and intelligent investigation by well-trained biologists and therapeutists than has the disease which affects the tissues at the necks and about the roots of the teeth. To-day it has a literature so full, a nomenclature so rich, an aspect so apparent, and yet possible causes so obscure that the profession and the public are fascinated by the mystery that seems to be bound up in this small section of tissue defined by a narrow border of gum and the so-called sockets of the teeth.

Nowadays the dental surgeon, in making an examination of the teeth, extends his observation to the surrounding tissues. Instead of simply hunting for and counting the number of cavities, as he formerly did, he critically examines the gums about the necks of the teeth, searching for evidences of a tendency toward, or the active presence of, a condition which is so prevalent that some authorities claim that sixty per cent. of the teeth of all persons over thirty years of age are lost by it, and not by decay. A few modern dentists, too, devote a large proportion of their time and practice to the treatment of this one disease, to the neglect of the more mechanical operations of the filling of cavities and the making of bridges and plates.

A quarter of a century ago no attention was given to this condition by the great body of men called dentists, further than to extract loose teeth and those surrounded by spongy and bleeding gums, and to make and adapt artificial substitutes. This was a simple curative method, quite in line with the highest ideals of legitimate practical dentistry. Enucleation was a surgical operation of considerable dignity with the dentist at that time. It was largely employed for "ulcerated teeth," for persistent fistulæ from the roots, and by many even for molars and bicuspid with "exposed and painful nerves." It was a successful operation for the cure of all diseases of the teeth and alveoli.

Gradually one after another of the disorders of the vascular and more highly organized tissues within and about the teeth—the membranes of support and secretion, the organs of nutrition of the tooth-tissues—began to be studied and successfully treated. At first methods were based on clinical and empirical observations, but followed by more systematic and scientific experiments with causes. Recall the history of the etiology of dental caries!

Riggs's disease, *alias* pyorrhea alveolaris, *alias* phagedenic pericementitis, interstitial gingivitis, ulitis purulosis, pericemental necrobiosis, and other histological and pathological aliases, has been pass-

ing through all the fluctuations of theoretical and experimental eruptions; yet its etiology is really no more obscure than that of catarrh of the respiratory passages. In therapeutics the general practitioner, as well as the specialists in rhinology and laryngology, find just as good a field in catarrh for continued treatment and permanent income (Whittaker) as the dentist can in this disease about which we are writing. In catarrh the causes are undoubtedly both local and constitutional. If the causes were purely local, the disease would be limited to one or two recognized phases or stages, like hyperemia, with its bland secretions; or simple acute inflammation, with the more strenuous efforts on the part of the blood and tissues in the direction of regeneration, and with no tendency toward recurrence after the local irritant had been removed.

As surgeons we can scarcely admit a picture of inflammation to our minds that is minus the "regenerating" efforts on the part of leucocytes, connective and other tissues, the blood, lymph, and nerves to resist deeper invasion, to expel the irritant, and to repair the damage. The more acute our appreciation of these efforts of the neighboring living tissues, the greater will be our success in assisting. This is the sum-total of the obligations of the physician and surgeon in the presence of disease. For this he studies histology and physiology, morbid anatomy, and the doctrines of pathology. This is the underlying principle of all treatment, and is the same whether applied in the life history of a single cell in disease or in the most highly developed complex tissue; and clearly the first application of the principle would be attention to the local conditions.

In this disease of the gums and sockets, as in specific diseases like typhoid fever or diphtheria, we find a local inflammation more or less intense, and including more or less tissue. It may be bounded by the border of the gum, or it may extend to the membranes of support and nutrition encircling the root of the tooth, or to the osseous wall about the root. In any case it is an inflammation presenting in character one or many phases or degrees, just as other inflammations do, though not necessarily presenting all the classic signs, and rarely exhibiting constitutional disturbance enough to induce fever.

The circulation in the tiny bloodvessels of the part is disordered, and we have in many of these cases an active, and afterward a passive, hyperemia or congestion; simultaneously we have exudates from the blood, which also vary according to the progress of the disease and changes in the circulation and tissues. A serous secretion at first may later be fibrinous, hemorrhagic, muco-purulent, purulent. Tissues, cellular and intercellular, in this circumscribed area, soaked with the excess of blood exudate, soften, take on disordered nutritive action, become reduced to a condition resembling embryonic tissue (connective tissues have been accused of always retaining a memory of the mesoblast); cellular elements multiply and try to organize and rebuild; a struggle toward regeneration continues, but irritants from without, mechanical and chemical, and obstructions and toxins from within oppose the struggle for exist-



ence on the part of the protoplasm of these tissues, and we have the complications of a chronic disease, with all that this implies. At any stage of the conflict the dental surgeon can afford aid. With his specially educated touch, his well-tempered instruments, selected to suit his own hand, the specially designed syringes, scissors, knives and curetting instruments, with pyrozone, antiseptics, and agents that promote waste and agents that stimulate or encourage repair, he is well equipped to battle with local irritants and aid the efforts of the tissues.

I know of no surgical operation that requires more discrimination, when we consider the conditions that favor chronicity in these tissues and locations, such as the lasting changes which take place in the tissue itself in the course of this disease; the repeated injury by external influences, such as concretions and infections, especially by bacteria; unfavorable nutritive conditions in the tissues, like necrobiosis or atrophy. When we reflect upon the methods the tissues themselves display in efforts toward a physiological type, dealing with the exudates and necrosed tissue by absorption or sequestration and expulsion, and in the meantime by granulation and regenerative methods struggling to repair and restore to health, we can understand that the more perfect our recognition of the exact pathological state at any given period of the disease the better able shall we be to assist rather than hinder these efforts on the part of the tissues themselves. Therefore, *judgment* is as important as surgical dexterity and thoroughness on the part of the operator.

To lay out for your inspection a lot of instruments, and to detail the push or pull movement for the same, or to define when iodine, or hot water, or trichloracetic acid, or sulfate of copper, or balsams, or any of the excellent remedies we have at our command through the diligence of the many students of the disease, is not the business of this paper, though it is the business of the surgeon to know about them. Simply to indicate clearly the relation this disease bears to others, to classify it, to define its position in pathology, in therapeutics, in dentistry, and, if I may say, in comparative specialism, is all that falls to our province to-day. The disease generally presents catarrhal, interstitial, and phagedenic inflammatory phases, because of the kinds of epithelial and connective tissues involved, and because of the location and unique characteristics of the arrangement and interdependence of these tissues.

Histology shows us that in the early life of the marginal structures a delicate membrane (Nasmyth's) bridges over the gap between gum and enamel, and that this disappears, leaving the space unprotected; also that the pericemental connective tissue in early life is less dense and fibrous, and more myxomatous than in middle life and old age; that these peridental membranes are prone to senile changes and degenerations, liable to obsolescence; that there is probably a glandular excretive function of the epithelia just under the free border of the gum.

In the direction of study of the excretive function of peripheral epithelia, some very recent work has been done in the north of Eng-

land with reference to peripheral neuritis. An etiological factor in many forms of this disease has been recognized to be of arsenical origin, the small quantities of arsenic being introduced into the system from beer. Dr. Dixon Mann's researches show in what extraordinary quantities arsenic is eliminated by the epidermis and its appendages. A fraction of a gram of epithelial scales, hair, or nail-parings has been found to yield an abundance of arsenical crystals. The physiologist and the toxicologist will lay these facts to heart and study the excretory functions of peripheral epithelia and the various poisons that find their way to these apparently insignificant bodies and locations.

With such transitional structures, so functionally complex and in such exposed situations, inflammations from causes ectogenous,—and these innumerable, as we can readily see, such as calcareous deposits, either serumnal or salivary; food *débris*, fermenting substances, bacterial activity, traumatic injuries, floss silk, tooth-brush bristles, and a host of things,—or causes hematogenous or lymphogenous, such as waste products in the plasma that have exuded from the capillary loops of the parts and have not been carried away by the lymph. Why! I think any of us can picture the irritation that might produce inflammation in these gum borders from a disabled kidney or a torpid liver, or from auto-infection from the alimentary canal, or from nerve-exhaustion; all these perhaps manifesting themselves as secondary results of perhaps earlier specific causes.

The history of this disease in man and domestic animals points to the fact that these gum borders, liable as they are to degenerations, are intimately dependent on the functional health of possibly every gland, membrane, and nerve center in the body, and on the quality and quantity of the body juices, on cachexiæ and diatheses.

I have been accused by some of my dearest friends and most kindly critics of not making positive statements in some former essays, and here I wish to announce that this Riggs's disease,—calling it so out of compliment to this early systematic student of the trouble,—has as many remote, predisposing, internal or systemic causes as has catarrh and the eczemas, and offers as wide a field for the specialist's treatment (this specialist having the broadest possible general medical training) as does chronic nasal catarrh by the rhinologist and the eczemas by the dermatologist. (I need not refer to the number of skin diseases that dermatologists define under this name, nor to the chronicity of many of these forms and the frequent failure of eradication on the part of the most distinguished of these specialists.)

Let me be positive again. The far-away predisposing cause of Riggs's disease is frequently a neurosis. The neurasthenic professional and business man, the stay-at-home wife overburdened with the monotony of her existence, the epileptic and the paralytic, exhibit this disease as a sequence of neurosis, and, as the psychophysiologist might show, as a result of abnormal emotions. Although this latter factor is too frequently neglected in the consideration of obscure causes of bodily ailments on account of the

difficulty of bringing the phenomena under careful laboratory observation, the general medical practitioner and the surgeon, and even the laity, recognize the important part the emotions play in the evolution of disease,—as after surgical operations. Depressing emotions frequently appear as assisting in the development of tuberculosis. Puerperal fever is also encouraged by depressing emotions from fear or reproach. These are recognized bodily effects from mental states, and in a series of laboratory experiments on rabbits, pigeons, and white mice it has been shown that animals under fright presented an increased susceptibility to inoculation with cultures of pathogenic microbes. "Asthenic emotions may thus be regarded as corresponding in their action to traumatisms, chill, fatigue, inanition, loss of blood, etc. It is not merely that the condition of the vessels change under emotional disturbance, but the phagocytes themselves exhibit the influence of changed conditions in apparent loss of vitality, with corresponding loss of the property of being attracted to the invading microbes or the product of their secretion."

Diseases of the blood and of the circulation are predisposing causes,—anemia, plethora, waste products not eliminated by distant glands, lithiasis, faulty gas exchanges in lungs and other tissues, persistent poisoning from house air, impregnated every time that atmospheric pressure overcomes modern sanitary plumbing. Now, the dentist who attacks the local manifestations is acting in a perfectly reasonable and logical manner, and does much good by his delicate surgery and topical treatment, but the remote causes remain alert and ready for attack at any time that local opportunities offer. When we can treat and cure gland disturbance, rebuild nerve tissue, and strike the hydra-headed gout, and put all the blood-elaborating and waste-eliminating organs within the pale of physiology, with all that this means in the struggle for an existence impregnated by heredity and encapsuled by environment, we may prevent this disease from occurrence and recurrence. And we are no farther away from this millennium of therapeutics than are our brilliant and worthy *confrères* in other departments of medicine.

Intelligent local treatment is the first consideration with us, as it is with the elements within the organism, and as it is with us in the treatment of dental caries.

The criticisms accusing specialists of partial medical culture and lack of apprehension of the broad principles of pathology because they apply local remedies for diseases with constitutional causes are not always just; for while dyscrasiæ exist and should be appreciated, and are correctly though sometimes indefinitely diagnosticated in many cases, we all recognize that the local manifestations would not present themselves if local irritations from within or from without, or local peculiarities of structure, did not make it possible; and local stimulation, application of heat or cold and medicines, or massage, are as important, if fortunately selected, as is the direct surgical removal of a visible irritant.

The sensitive nerve terminals and reflex motor responses, the



capillary circulation, the leucocytes congregated at the point of distress, are all sensitive to local impressions and susceptible to intelligent medication; else why use iodine, or ointments, or massage, or ice in certain cases? And it may be proper to assert just here that in the treatment of constitutional phases or more remote special organs like the nervous system or the intestinal tract, or other diseases like syphilis or tuberculosis, or concurrent catarrhal manifestations, consultations with the family physician or other specialists should be insisted upon, for the benefit of the patient; that the broadest measures in therapeutics may be adopted and harmoniously carried out by the combined knowledge, methods, and training which are the result only of special study. I have no sympathy with the specialist who is sufficient unto himself, whether his practice is confined to diseases of the nervous system, to surgery, to internal medicine, or to general practice.

The subdivision of medical practice into specialties makes it imperative that consultations between specialists should be frequent, that we may avoid the partial treatment which is the bane of specialism.

Local treatment has in many cases proven successful in catarrh, in eczema, and in this disease. In certain stages the cure is apparently complete; in others the teeth are made tolerable and placed so that functions are performed normally and appearance preserved. Again, this disease bears the same relation to extraction that caries does. Extraction cures caries, and it cures alveolar abscess and pyorrhea alveolaris; but the aim of the dental surgeon of to-day is to save teeth from the forceps, and to avoid the necessity of wearing the artistic products of modern prosthesis. This is all well enough, and legitimate modern dentistry, but, having lived and practiced through the two methods of treatment, I should not be true to my convictions if I did not add that the extraction of diseased teeth and the supplying of artificial and artistic substitutes is a surgical and mechanical treatment that has proved of the highest value to millions of people, and it must not be allowed to fall into innocuous desuetude at this stage of the game.

May I be permitted also to suggest that as in the local treatment of this disease of the gums the most delicate and intelligent surgery is required, and a persistent patience that is not necessary in more brilliant efforts like the removal of a tumor or the mastoid operation, so called, and as time and skill are the business assets of the operator, all old ideas about compensation that have grown up between dentist and patient must be done away with. We are placed in the curious position of being able at any moment, by surgical elimination, to effect a radical cure of the disease; and yet our earnest desire and the demands of cultured patients are all for the saving of the teeth. We have become imbued with the doctrine that the dentist's highest aim is to save to usefulness and beauty the natural teeth. Our lives are spent in this effort,—in fighting the diseases which threaten the destruction of these organs. We fight caries, pulpitis, alveolitis, and Riggs's disease,—not a very long list, but chronic, progressive, and complicated in character.

This special Riggs's disease is the most destructive in its effects upon the patient and upon his teeth, and requires longer, more persistent, and more frequent operations than any other, not excepting caries. The recognition of these facts is important to dentist and patient.

Teeth are not a necessity, the loss of which will greatly affect the life, health, and pursuit of happiness of the individual. Teeth are of the nature of a twentieth-century luxury, and luxuries are expensive.

The adjustment of compensation to the dentist for his efforts in battling with Riggs's disease must be upon the plane of the other specialists in medicine who treat the eye, the ear, the nose, or the throat. If we cannot rise to this plane (and this may be why many dentists offer no hope of palliation by treatment), then we should retire to the older platform and recommend extraction and plates.

The general health of the patient afflicted with Riggs's disease demands either intelligent and perhaps prolonged treatment and constant watchfulness, followed by persistent hygienic attention, or the other alternative, radical cure by extraction; and we must, as conservators of the health of our patients and in the interests of preventive medicine, plainly state the case to those who come to us for advice. I cannot here point out even the partial and obvious diseases which may result from neglected pyorrhea alveolaris,—the sequelæ of Riggs's disease,—but the interdependence of the health of organs and tissue upon one another is too well known for us to permit the whole organism to become gradually undermined by this progressive, chronic, and curable disease.

---

## CORRESPONDENCE.

---

### "A CHARGE OF PLAGIARISM."

TO THE EDITOR OF THE DENTAL COSMOS:

*Sir*,—I wish to point out that the water swager which Messrs. C. Ash & Sons and Mr. Badcock, of London, have applied to making platinum and gold matrices for inlays is not their invention.

This water swager was duly patented for swaging metal and other substances by John Hutchens Gartrell, of Penzance, Cornwall, Eng., as the inventor, in the U. S. Patent Office, Washington, on June 7, 1898,—No. 605,223 (no model). In paragraphs 75 to 80 the patent recites: "A rubber cushion filled with water is now placed in position on the top thereof. Upon pressure being applied by turning the screw, the water cushion will force the sheet tin to fit accurately into the impression." In paragraphs 115-120, the inventor, J. H. Gartrell, says: "the water cushion adapted to be placed between the plunger and the article to be pressed."

It will be seen from these extracts from the patent that a screw press is described, to be used with a water cushion and for pressing sheet metal into a mold or over a mold of plaster of Paris.

It would appear, therefore, that the sale or use in the United States of a press for inlay work that Messrs. C. Ash & Sons and Mr. Badcock *did not invent* is an infringement of Gartrell's patent without his consent, and this latter formality Messrs. C. Ash & Sons are careful not to mention in any of their letters you have published in the COSMOS.

A little inquiry at the Patent Office at Washington will prove the truth of this matter, and Messrs. C. Ash & Sons and Mr. Badcock's claims to originality therein are the baseless fabric of a dream.

Yours truly,

DUBLIN, December 16, 1901.

W. BOOTH PEARSALL.

---

## PROCEEDINGS OF SOCIETIES.

---

### INTERNATIONAL DENTAL FEDERATION.

(Continued from page 39)

---

#### INTERNATIONAL COMMISSION OF EDUCATION—*Continued.*

LONDON, AUGUST 5, 1901.

THE meeting was called to order at 5.15 P. M. by Dr. GODON, president of the International Dental Federation.

The following members answered the roll-call: Drs. Brophy, Bryan, Aguilar, Godon, Sauvez, Queudot, Viau, Roy, Harlan, Kirk, Förberg, Haderup, Zsigmondy, Frank, Baruch, Quartermann, Huet, Hesse, and Weiser.

Dr. Förberg presented on behalf of Dr. Sandstedt, of Stockholm, excuses for the absence of the latter.

Dr. Godon said that the commission would proceed to the election of officers for the present session, and that at the last meeting the commission would decide whether the officers elected should continue in office for another year or not.

Dr. Aguilar proposed the appointing of a committee whose duty should be to nominate the officers.

Dr. Godon made a motion to the effect that the officers of the International Dental Federation compose that committee. Carried.

During the absence of Dr. Godon (who left the meeting for a short time with the officers of the International Dental Federation in order to discuss the question of nominating the officers of the International Commission of Education) Dr. Frank occupied the chair.

Dr. Brophy then opened the general discussion upon Dental Education.

The following report was then read by Dr. Zsigmondy:

#### REPORT ON DENTAL EDUCATION (BY DRs. ZSIGMONDY AND WEISER).

In Austria, dentistry has always been considered as a part of surgery. In spite of the defects and errors of the law, and also notwithstanding the negligence of the government in its application, this law has always required that the dentist shall have completed his medical studies before being allowed to practice dental surgery. The physicians in Austria do not want this condi-



tion of things changed. Even by making the greatest concession and fully acknowledging the modern progress, it cannot be admitted that dentistry is composed of two-thirds of manual training and one-third of surgical science. We see every day in our practice that this third is a very important factor in dentistry. We also see that it is not very difficult for a physician to become familiar with the technical two-thirds of this art, while on the contrary it is very difficult for the dental mechanic to acquire the said one-third of surgical science necessary for the treating of diseases consecutive to disturbances of the teeth,—that is, diseases of the gums, of the jaws, of the maxillary sinus, also to possess himself of the necessary knowledge required for the administration of general and local anesthesia. It is absolutely indispensable that a dentist should know the course to be followed in cases of this sort, for incertitude may have very disastrous effects. During the last ten years we find more than one antagonist to this opinion, on various grounds, and in support of their arguments against the study of medicine by the dentist, they claim that in order to become a good dentist manual training should be begun at the age of fourteen, or eighteen at the latest. This argument is contestable in itself, and also because the contrary is every day in evidence. It is contestable because every one who intends to follow the surgical profession must possess a certain degree of dexterity and manual training, and it is certain that this dexterity will be increased through anatomical studies, the making of microscopical preparations, the use of chemical and physical appliances, also by operations upon living and dead subjects. This refutes the fact that the number of Austrian *médecin-dentistes* capable of making their own prosthetic work is becoming more limited every day. It is also refuted by the scientific literature of ancient date, in which we find important works by Austro-Hungarian writers, just as at the present time our authors have acquired a reputation in this branch of dental literature. We see that in Austria reviews are published composed principally of papers by Austrian writers. This comparatively great development has taken place in spite of the fact that we have only three clinics or dental courses poorly endowed by the state (and this only very recently) and one supported by private funds.

By comparing this development with the erroneous position in which dentistry finds itself to-day in the countries where this part of medical science has not been or is not protected by appropriate laws and by good special schools, but on the contrary is open to any one, it can be easily seen that this result has been attained only by the fact that in Austria dentistry has always been in the hands of physicians who do not spare any time, work, or material sacrifice in order to improve their manual abilities, either by means of special studies or by taking courses at foreign colleges.

The *médecin-dentistes* of Austria observe with satisfaction that their art has attained in their country the same degree of perfection as in the majority of the other states of Europe, and this notwithstanding the limited number of special clinics and their small endowments. By the new method of examinations of the medical school, which becomes legal in 1903, dentistry will be a compulsory study, and the government having promised the organization of new clinics and new courses in all our universities, this progress will take considerable proportions,—in fact, the development of medical science will lead necessarily toward a complete reorganization of the study of medicine. It is inevitable that the students shall take up at first and during three or four years the study of the general and theoretical branches of this science, general and pathological anatomy, physics, chemistry, physiology, general pathology, microscopy, bacteriology, internal medicine, also a second course of about two years, which would be devoted to the special branches of medicine. Nevertheless it should not be thought that because we are optimistic we are also blind to the defects of the method of examination of our schools of medicine, defects that cannot be denied, any more than can the errors of our legislature with regard to this subject,—that is, that the degree of dentist is not absolutely connected with examinations and with sufficient proofs of special studies in this important branch of medical science. The corporations of *médecin-dentistes* of Austria-Hungary many years ago made fruitless efforts to bring about a change as to this, but the government has

remained indifferent, because it does not attach enough importance to it, and also because it does not want to go into the expense of organizing new courses and new clinics; but if this effort has not yet succeeded, we hope that the official representatives newly created by the "Aerztekammer," and particularly by the "Organisation der Aerzte" will be more successful. At the present time they are working with the government to the end that doctors of general medicine who have given proofs of their aptitude by means of special studies and special examination shall alone have the right to practice dentistry. The dentists of Austria are persuaded that this is the only way of putting an end to the controversies between the *médecin-dentistes* and the technical dentist. They hope this inasmuch as in Italy and other countries it is also desired that the dentists shall be doctors of medicine, and in Germany a congress of professors of dentistry has been organized in order to ask the government that the study of this part of medical science shall be accessible only to students that have passed their baccalaureate degree. This congress made a petition to the Council concerning changes in the examinations by which the studies and examinations in dentistry shall be made to resemble the studies and examinations in medicine. The Austrian dentists are of the opinion that it is their duty to defend and improve the system in vogue in their country, which looks upon dentistry as a specialty of medicine.

Dr. HADERUP. We have just heard the exposition of two perfectly opposite principles. The Austrian representatives believe that dental education should have for its basis a complete medical education, while Dr. Brophy, of Chicago, on the contrary, asks that the future dentist should be first of all a practitioner and that he should receive his complete dental education in a dental school.

Before giving you my opinion on this capital question, I want to explain my position. I began the practice of dentistry twenty-four years ago; at that time I was a physician, and my opinion on dental education was similar to that of the Austrian representatives, but at the present time my opinion is different, and for thirteen years I have believed that complete dental education should be given in a special school. The experience that I have been able to gather in this direction has also confirmed my opinion that the dental students should only take up the medical studies necessary for their special calling, and that the theoretical and practical instruction should work side by side and should be given as far as possible in the dental school itself.

As far as the essential points of this problem are concerned I must say that I agree with Dr. Brophy's observations; however, he seems to me to have a tendency to consider all the branches of dental education as being of a purely practical nature, and to accord only a very small degree of importance to the theoretical subjects.

He is right if he refers to the sterile theories which are in no way connected with the teaching of the practical subjects, but my personal opinion is that the dentist cannot do without the scientific knowledge which forms the basis of practical education in all walks of life. In one word, dental education must be not only practical, but theoretico-practical.

Dr. Godon at this point resumed the chair and announced that the committee had made the following nominations: For president, Dr. Brophy; for vice-presidents, Drs. Zsigmondy, Kirk, and Pater-son.

The meeting then proceeded to vote upon these names. The gentlemen whose names were proposed were elected to their respective offices.

LONDON, AUGUST 6, 1901.

The meeting was called to order at 10.45 A. M. by President Brophy, the following members being present: Drs. Brophy, Aguilar, Bryan, Hesse, Zsigmondy, Weiser, Baruch, Frank, Huet, Quartermann, Queudot, Sauvez, Godon, Viau, and Roy.

Dr. Sauvez announced that the Executive Council had appointed Drs. Bryan, Haderup, and Zsigmondy members of the Commission of Education. He then explained Dr. Godon's motive in having at first resigned his office in the International Dental Federation, which was that the position vacated might be open to the other nationalities.

Dr. Brophy then announced that the next thing on the program was the continuation of the discussion upon dental education.

Dr. AGUILAR said that he was very happy to see the organization of the International Commission of Education according to the resolution that he presented to the Congress last year. Replying to Dr. Brophy, he said that his opinions (Dr. Brophy's) could be applied to the United States and to countries where dental education is organized, but that in the countries where dental education has not as yet been organized they are not applicable, as in such a case nothing can be done without the help of the government, and hence the intervention of the university cannot be avoided. Dr. Aguilar said that the general education of the dentist should be similar to that of the physician, and hence the scientific and medical branches should be taught in the schools of medicine, which are the most competent ones for this purpose.

He asked that the commission should determine the subjects that dental education should comprise.

Dr. HESSE said that the question of how the subjects should be taught should not be taken into consideration, and that instead it should be decided what subjects should be included in the dental curriculum.

Dr. ROY. This discussion is a very important one, as opportunity is given to us to hear the views of the representatives of two opposite parties,—those who claim a medical education for the dentist, and those who are of the opinion that to the dentist a special education should be given. The controversy between these two parties is not a new one, as we find it at the beginning of the organization of dental education. The first dental school, the Baltimore College of Dental Surgery, was founded only after many unsuccessful attempts to institute the teaching of dentistry in the medical schools. It was the foundation of this school that initiated the autonomy of dentistry. This difference between the two principles, the medical principle and the odontological principle, is not only a very ancient but also a very general one, and is found in all countries to a greater or less degree.

What are the reasons for the sometimes very warm controversies between people who are animated with the same ideal,—the pro-



gress of the profession? The reasons are to be found in the special features characteristic of dentistry, which is a mixed profession, and in the fundamental nature of the problem calling for decision, viz, whether dental education should take for its basis the medical studies, or whether the dental studies should constitute an autonomous education.

Those who have medical tendencies think that dentistry is a branch of medicine to the same degree as ophthalmology or laryngology. For them, consequently, the study of medicine represents the best preparation for the practice of this specialty, the distinctly practical subjects being acquired very quickly. Following this line of thought, Dr. Arkövy told us yesterday that six months of special study is all that is required. Those of the opposite party, on the contrary, proclaim the autonomy of the profession. While acknowledging that dentistry has some points in common with medicine, such mutual borrowings as are frequent between the sciences, they claim that skill plays a very important *rôle* in the practice of dentistry; that this skill takes time and is difficult to acquire, and that it is not very much to devote to it a few years of progressive training of the eye and hand.

Hence, I think that the whole problem resides in this difference of appreciation of the time necessary to acquire manual skill. Some think that this should be of short duration; others, on the other hand, that it should be of long duration. There is, in fact, a point that should be established at the beginning of this discussion, and this is that it is not possible in four or five years to become both a good physician and a good dentist; it takes almost ten years. But such a long period of study is impossible to require either from the medical or from the dental student. The result of such a measure would mean the diminution in the number of dentists, and this I think would prove to be most detrimental in the sense that those with limited means could not have their teeth attended to, as the diminution in the number of dentists would result in the raising of fees. All classes of society should be able to profit by the progress made by dental therapeutics, and I do not agree with Dr. Guillermin, who, in the report that he read yesterday, complains of the large number of dentists and of the tendency to use charlatanic proceedings which are detrimental to the dental profession and which are brought about by this accumulation of dentists.

The medical degree for the dentist is only an exception. Note the conditions existing in Austria, where this diploma is required; there is, in spite of all, a special group, the *Zahnkünstler*, which make a competition with the *médecin-dentistes*, naturally brought about by the reasons I have pointed out to you; and if the *Zahnkünstler* exist it is because they answer an existing need. Hence, as I think I have proved that a too long period of time must not be demanded (four or five years seems to me to be the maximum that could be asked), it is indispensable to make an appropriate division between the theoretical and practical teaching. It can be seen by the data in my report to the Paris Congress, quoted by Dr. Arkövy

and erroneously attributed to my friend, Dr. Godon, that in the majority of dental schools the number of hours devoted to theory is considerably inferior to those devoted to practical work.

Nevertheless, Dr. Arkövy and myself differ altogether with regard to the division of time. In order to oppose the propositions that I have furnished he has calculated the number of hours devoted in the European universities to medical studies. He found that the University of Buda-Pesth (and the same is the case for the other universities) in five years the number of hours devoted to study amounted to 8632, and that of these 5002 are devoted to theory and 3630 to practice. He then says: "Hence, for many centuries the physicians have been badly educated!—for, contrary to what takes place in the dental schools, they have devoted more time to the theoretical studies." But Dr. Arkövy forgets just one thing, and this is that the object of the medical schools is to make physicians, and that medicine is a profession which requires the minimum amount of manual skill. If the medical schools, on the contrary, had only to educate surgeons, they would have to modify those plans by giving a greater amount of importance to the practical subjects. This is what is done in the case of those medical students who in the future are to take up surgery exclusively. They devote more time (than do those who will take up medicine) to anatomical work and to operative medicine, and this with the object of increasing their manual skill. I do not want to prolong this discussion, but I think that the principle should be established that dentistry is undoubtedly a scientific profession and also a handicraft, and we need not feel ashamed of it, as does Dr. Arkövy. Hence, if it is a handicraft, it requires, as any other trade, a prolonged apprenticeship of the hand and eye, and in order not to prolong the period of study the greatest part of this should be devoted to the practical studies.

It is understood that theory should not be neglected before beginning and during the practical studies, but then the practical subjects should never be neglected, for without it good dental therapeutics (the final purpose of odontology) is not possible.

Dr. GODON. The discussion demands that the commission should not study those points which bring about controversy, but those questions upon which it is easy to agree, and particularly the program of dental education. For this purpose it would be advisable to take up the five points as brought forward by Dr. Sauvez in his report. These points were as follows: (1) Preliminary education. (2) Duration of the course and the order in which the different subjects shall be taken up. (3) Program of the scientific and medical education. (4) Program of the technical teaching. (5) Qualification and diploma.

He would propose the appointment of five members for the separate study of every one of these questions, the individual reports to be presented at the next session of the commission in 1902. He made a motion to the effect that the members be appointed at the next meeting at Cambridge. Carried.

Dr. Brophy asked how many countries were represented in the

Federation, and was told that sixteen countries were represented, and that twelve had sent delegates.

Dr. Brophy expressed a desire that there might be representatives of all countries and schools. He said that he regretted the absence of English members in the commission.

Dr. Godon explained that Dr. Cunningham and Dr. Paterson are members of the commission representing England, but that the latter, on account of his position of secretary of the British Dental Association, had not been able to attend the meetings regularly, and that it was not possible to make an official invitation to the British Dental Association on account of difficulties met with in the organization of the new branches.

He then said that all the members would now agree in asking President Brophy to inform the British Dental Association at this afternoon's meeting of what has been done up to the present, to excuse the commission for not having addressed an official invitation to the British Dental Association (the commission being unable to do so on account of not being completely organized), and to invite the members of that association to take part in the remaining meetings of the commission.

It was decided to hold the next meeting in Cambridge August 7, at 11 A. M.

CAMBRIDGE, AUGUST 7, 1901.

The meeting was called to order at Trinity College Hall, Cambridge, at 11 A. M., by President Brophy.

The following members were present: Drs. Brophy, Godon, Bryan, Pearson, Queudot, Viau, Aguilar, Kirk, Grevers, Zsigmondy, Weiser, Frank, Quartermann, Baruch, Hesse, Huet, Haderup, Paterson, Rosenthal, Sauvez, Harlan, and Roy. The following were absent: Drs. Förberg and Cunningham.

Dr. Roy, the secretary, read the report of the previous meeting, which was accepted after some remarks by Drs. Aguilar and Zsigmondy.

Dr. Sauvez announced that the committee of the International Dental Federation had appointed Dr. Pearson adjunct member for the present meeting.

Dr. Godon announced that two new propositions had been received from Dr. Sauvez and one from Dr. Roy.

Dr. Sauvez' proposition reads as follows:

The delegates of each country represented will be requested to prepare for next year's meeting a *résumé* of a few pages describing without any commentary the dental legislation and education of their respective countries.

The commission would print these reports.

In the case of countries being represented by more than one delegate the member who should write the report would be appointed by the various delegates.

After a few remarks by Drs. Aguilar, Quartermann, Paterson, and Roy this proposition was adopted.

Dr. Roy's proposition reads as follows:

The commission shall appoint a member to study the conditions of affiliation of all the schools to the International Dental Federation, and also the



means of bringing about such affiliation, so that the Commission shall be in a position next year to adopt appropriate resolutions.

Dr. Godon said that this proposition was embodied in Dr. Spaulding's motion to the International Dental Congress, and proposed that the two propositions shall be combined in one.

Dr. Rosenthal then read Dr. Spaulding's proposition, and both propositions were adopted. Dr. Rosenthal was appointed to study and report upon these subjects.

Dr. Brophy announced that members would now be appointed to report upon the following questions proposed by Dr. Sauvez:

1. Preliminary education.
2. Time, duration, and order of studies.
3. Program of the scientific and medical education.
4. Program of the technical education.
5. Qualification and diploma.

Dr. Aguilar said that he was surprised to observe that his propositions had been totally ignored.

After a discussion in which Drs. Godon, Hesse, Sauvez, and Brophy took part, it was decided to take up Dr. Aguilar's proposition as the basis of the discussion.

Dr. Aguilar then read his first proposition:

That a member be appointed to report and present resolutions next year upon each of the following questions:

(1) What should be the preliminary requirements for admission into dental schools?

Dr. Godon proposed to suppress the words dental schools, which might awaken prejudices.

Dr. Rosenthal also made some remarks with regard to the changing of the wording of this proposition.

After a discussion to which Drs. Godon, Grevers, Paterson, Rosenthal, Hesse, and Aguilar took part, the proposition after some changes in its wording was adopted.

Dr. Aguilar then read his second proposition:

(2) What are the theoretical and new studies that the student should have concluded before being admitted to the practice of dentistry.

Dr. Sauvez proposed to divide the proposition into three parts.

1. Theoretical, scientific, and medical studies.
2. Theoretico-technical studies.
3. Practical studies.

Dr. Godon proposed only two divisions:

1. Scientific and medical studies.
2. Technical studies.

Drs. Weiser, Rosenthal, and Hesse asked that Dr. Sauvez' second proposition referring to the time, duration, and order of studies be the one adopted, as being the most clear and precise.

Dr. Rosenthal proposed the following wording, which was indorsed by Dr. Aguilar:

(2) What shall be the composition, duration, and order of the subjects of the program of dental studies?

The proposition as thus stated was adopted.

Dr. Aguilar read his third proposition:

(3) What part of the studies which are taught in the medical schools shall be pursued by the dentist?

Dr. Kirk proposed to modify the proposition so that it might read as follows:

(3) What part of the studies taught in the schools of medicine shall be pursued by the dental student?

Dr. Brophy said that the term medicine is too general, and that it should be specified what part of anatomy and therapeutics should be taught to the dentist.

After observations by Drs. Grevers, Roy, Godon, Rosenthal, and Paterson, Dr. Aguilar's third proposition as modified by Dr. Kirk was then adopted.

Dr. Aguilar then read his fourth proposition:

(4) Which is the best title to be given to persons practicing the therapeutics and the prosthetic treatment of the diseases of the mouth and teeth?

Dr. Hesse proposed not to consider this proposition, which seemed to him to be altogether out of place.

Dr. Roy proposed to add another proposition to those already adopted:

What shall be the composition of the boards that accord the right to practice?

This proposition was not adopted.

Dr. Rosenthal presented in the name of Dr. Bryan the following proposition:

That a commission be appointed to study the means of educating the public upon dental matters.

Dr. Godon was of the opinion that this proposition should be submitted to the Executive Council of the International Dental Federation in the same way as Dr. Cunningham's proposition was sent to that body.

Dr. Sauvez, in order to give some consideration to the proposition presented by Dr. Paterson at the beginning of the discussion, and in order to simplify the work of the commission, made the following proposition:

Each member of the Commission of Education is requested to make a report upon the questions that have been referred to as far as it touches upon his own country.

Such report is a personal one and is not binding upon the countries represented. It should be addressed before March 1, 1902, to the secretary of the commission who is in charge of the printing of the reports which are at that time to be addressed to each member.

This proposition was adopted.

Dr. Aguilar remarked that in view of the expenses which the

work of the commission would involve for the publication of the transactions, he would make the following proposition:

A voluntary subscription is opened between the different members of this commission and the societies represented, so as to collect the necessary funds for the publication of the transactions of this meeting and of those that may take place later on.

Carried.

Dr. Aguilar also proposed:

That all the propositions to the commission must be presented in writing before they can be taken up for consideration.

Carried.

Dr. Godon made a motion with regard to the extension of the powers of the present officers to the next meeting in Stockholm, which was carried.

The International Commission of Education then adjourned.

---

## TRI-STATE DENTAL MEETING OF THE OHIO, MICHIGAN, AND INDIANA DENTAL ASSOCIATIONS.

(Continued from page 70.)

### FIRST DAY—*Evening Session.*

At this session a paper was read by Dr. FREDERICK J. CAPON, entitled "Porcelain as an Art in Crown-Work."\*

#### *Discussion.*

Dr. JOHN E. NYMAN, Chicago. It is indeed a pleasure to listen to a man whom you know practices what he preaches. So it has been with peculiar pleasure that I have listened to Dr. Capon's opening words, in which he pleads that we should develop ourselves as artists and not be swayed by the baneful influence of commercialism, which has done more to work deterioration in our profession than any lack of manipulative ability; there is hardly a man who has an ordinary brain and ordinary fingers but can develop himself to become a good manipulator of dental material. The great trouble with the great majority of unskillful and incompetent operators is that they have never cared to develop themselves for all there was in them or in their work. They have been led on by the sight of the almighty dollar, and studied the ease with which they could get it.

The man who is appealed to most strongly by the commercial side of the profession is nothing more nor less than an artisan; and I defy you to tell me where an artisan who was merely an artisan ever did anything for humanity. It has always been the artist, even though with begrimed hands and dressed in rough clothes, whose supreme motive was the perfection of the product of his labor, who has wrought for the benefit of humanity. The ideal dentist is an artist in whom is combined manipulative ability, dis-

---

\*Printed in full in this issue of the DENTAL COSMOS, page 106.



cernment, discrimination, sound judgment, and above all else perseverance. In so far as the dentist is deficient in these qualities, in the same ratio will be the failures in his practice.

I am glad the doctor spoke of the importance of preserving the interproximal space. It matters not whether you restore the lost tissue with a crown or with a filling, you must preserve the interproximal space. If you do not, in a short time gingivitis will develop, followed perhaps by pyorrhea. It will probably be one of those peculiar cases, isolated pyorrhea. In nine cases out of ten these isolated cases arise from faulty dental operations. A crown that does not properly protect the interproximal space develops an irritation there, and every time the vitality of the patient runs a little below the normal soreness of the tooth and suffering results. It never feels right, and it never looks right, for very soon the gum in that region becomes congested, the little capillaries are dilated and a chronic condition results which cannot be relieved.

Now, as to the method of trimming roots and fitting bands, I differ a little with Dr. Capon in that regard. I am influenced very strongly by the mechanical considerations in all these operations.

I never attempt to trim a *normally* shaped tooth for a crown unless the pulp has been devitalized, because the proper trimming of the average tooth with a live pulp is an ordeal for the patient that few can or will submit to, and even if the patient should submit to the operation and you should succeed in it, the chances are very great that in a short time the pulp will die from the shock it has undergone and you will have an abscessed root beneath a crown to deal with, and you all know what that means to both patient and operator.

All things being favorable for crowning, my procedure is as follows: The tooth is ground down to within an eighth of an inch of the gum, and the root-canal is then enlarged to receive the post. This is invariably done before trimming the root to the gum line. I believe it is a wise method, because there may be some abnormality about the root which prevents enlarging the canal to the depth that is necessary. Should such an abnormality exist, one is obliged to leave more of the root extending above the gum surface at the lingual aspect than would otherwise be done. A round tapered post is used to insure contact at all points between it and the band. By far the greater number of dentists insert posts of too small diameter and of too great length,—just the very thing they should not do. The strength of a post depends upon its diameter; it matters not whether it be one-fourth or three-fourths of an inch long when it comes to bear the lateral stress that is exerted upon the root in the process of mastication, it is the diameter of the post and not the length that enables it to withstand the stress. Of course the length of a post, as it is imbedded in cement, will have something to do with the resistance to traction power, but that is not the force which we have to plan to resist. For canines and centrals I use a round tapered post made of No. 14 gauge iridio-platinum wire. For bicuspsids I use No. 16 gauge slightly flattened; for molars, No. 12 gauge whenever the lingual root-canal can be enlarged sufficiently to receive it.

In regard to the length of the post, if it is imbedded in the root-canal to the depth of one thirty-second of an inch greater than the length of the facing used, it is fully as long as is necessary. Considering the end of the root as the fulcrum, the post as the lever of resistance, and the crown as the lever of force, it will be seen that the lever of resistance is greater than the lever of force, and this insures retention of the crown under all stress.

Having been able to enlarge the root-canal to the depth and size desired, the tooth is now trimmed down to within one thirty-second of an inch of the gum margin at the interproximal points. The enamel is now removed from the root and the sides paralleled. This is done with the enamel cleavers designed by Dr. A. G. Johnson, of Chicago, which are the best instruments that I have found for this purpose. I never use disks upon the root anywhere below the gum margin on account of the danger of imbedding grit in the gum tissue surrounding the root. I firmly believe that this is the cause of much of the subacute gingivitis found about crowns which have been well fitted to the root. The band is now fitted before cutting off the root any further, it being much easier to fit the band upon the root while it projects slightly above the gum margin. The band having been fitted, the root is now ground horizontally flat to a point slightly below the gum margin at the interproximate points. The buccal half of the root is ground down to the gum margin, then with a large round bur is ground out slightly below the gum margin, leaving a fine edge of the tooth remaining just at the margin. This edge is now trimmed down by means of a large flat chisel, and if the hand is steadied carefully this may be done without causing any hemorrhage whatever. The band is now slipped on the root and the outline of the root traced on the inside of it, and it is then cut down to this mark. We now have a band the edge of the lingual half of which is horizontally flat, while the edge of the buccal half has a convexity which corresponds with the gum margin. The cap is first soldered to the lingual half (this being an easy matter because it is a flat surface), a flap being allowed to extend out over the buccal half of the band. The band is now slipped upon the root again; the lingual half being held firmly in position with an instrument, the flap of the cap is forced down to contact with the buccal half of the band. After the soldering is completed, when the cap is replaced the buccal half will be found to lie slightly beneath the gum margin. A perforation is now made with a cone bur directly over the enlarged root canal and the post forced through it into its place. The flat lingual half of the cap affords a seat for the crown, and with a perpendicular band at right angles to it assists in resisting the lateral stress exerted in the buccal direction.

To my mind, whether a full band which encircles the entire root or a partial band encircling only a part of it shall be used in the construction of anterior crowns depends very much upon the nature of the buccal gum margin and the depth of its free margin. If there is a deep free margin, and a spongy gum with little elasticity, a full band may be placed one thirty-second of an inch beneath the margin without danger of causing trouble; but frequently we find that



the buccal gum margin is much tenser than at any other point about the root and that the free margin is also less. Consequently, if a band is placed beneath it at that point it is very apt to impinge slightly upon the peridental membrane or the gum tissue and cause more or less inflammation. It has been my practice in these cases to fit a band around two-thirds of the root, leaving the buccal third of the root unbanded. The buccal half of the face of the root is cut up a thirty-second of an inch below the gum margin and the flap of the cap above referred to is burnished into contact with it. I believe that such a band carefully fitted will protect the root from fracture.

I have asked several gentlemen present at this meeting in what direction they usually find the line of fracture in a root which had been fractured beneath an artificial crown. Remember, I am not speaking of a fracture which has occurred while the natural crown, or part of it, was in place; but of the fracture of a root beneath an artificial crown. These gentlemen were somewhat at a loss for a definite reply. Lately, while considering this matter, I looked carefully through my records and find that during the past ten years I have had under my observation twenty-three fractured roots, which had been fractured beneath an artificial crown, and invariably the line of fracture has been bucco-lingual. I have never yet observed a case in which the fracture has been mesio-distal. Consequently, this partial band extending around the buccal half of the root and along its mesial and distal sides guards against fracture in the direction in which I have invariably found it. The fact that a patient was a man or a woman would not influence me in determining whether to put on an anterior crown with a partial or full band. A smooth-faced man looks just as hideous with discolored patches of gum at the margin of one of the incisors as a woman does so far as that is concerned. True, it shocks us more when we see it in the mouth of a beautiful woman than when we see it in the severe-looking mouth of the average man, but nevertheless it is just as inartistic in the one case as in the other.

In regard to cup crowns for use in very short bites, I usually prepare and cap the root as for any other case. A very heavy post of No. 12 iridio-platinum wire is used, and the portion of it to be inserted in the root is trimmed down to the proper length, while the portion above the root is untrimmed and is allowed to extend until it is in contact with the occluding cusp when the teeth are closed. It is simply impossible to apply stress enough with the jaws to bend that post out of position. To avoid danger of fracturing off the lingual cusp of the crown (after it is completed) a piece of iridio-platinum plate of No. 28 gauge is adjusted to the cap, extending around the lingual half of it and up to nearly the tip of the lingual cusp and is soldered to the edge of the cap. This lingual band of iridio-platinum will prevent fracturing of the lingual cusp.

Now, in regard to selecting facings with reference to shade. It sometimes is a mistake to attempt to match the facing with the teeth adjacent to the root which is being crowned, because there is usually considerable variation in the shade of the natural teeth,



and very often in crowning a lateral you will find the lateral on the opposite side is not the same shade as either the central or the canine adjacent. The canine as a rule is much darker and of a more decided yellow tinge, while as a rule the central is lighter, and if anything of a grayer tinge. So it has been my invariable practice in crowning a canine to select a facing to match with the canine on the opposite side of the mouth, and if I was crowning a lateral to match the lateral on the other side of the mouth,—providing that tooth was normal, that is, providing it had not been discolored by disease or medicinal agents; and in that manner I have attained more artistic results than I would have if I had attempted to match the tooth adjacent to the one being crowned. I touched upon this point in a paper which I read in 1898, and Dr. Royce, of Chicago, has recently taken it up, gone into it more fully and published quite an elaborate paper on it, in which he conclusively demonstrates the variation of shade as we find it in the natural teeth, and that variation is quite remarkable. So, I say, you will often get more artistic results if you match the same tooth on the other side than if you attempt to match the adjacent teeth.

I do not attempt to bend the pins of a facing into contact with the structure until after I have invested the case. Dr. R. C. Brophy's investment material is pre-eminently the best thing on the market to-day for that purpose. It does not shrink or fuse onto the platinum or porcelain facing, and it has great strength. Shortly after investing (in five or ten minutes) I can pick the wax out and bend the pins of the facing to the structure and be certain that it has not been sprung out of place. You can force them into contact. I am very careful not to boil the wax out of the investment, because I do not believe any investment is strong after it has been subjected to water after it has set. So I soften the wax with dry heat, pick it out and dissolve out the residue by chloroform.

The pins are soldered to the cap and post with pure gold, using a minimum amount, the joint being first slightly fluxed; as the case heats up this will stick the small pieces of pure gold plate in place, so that the blast of the blow-pipe will not dislodge them. The heat is maintained at the melting-point of the gold for about ten seconds after it flows. Upon cooling, no trace of gold is to be seen, and you will find you have not bleached the delicate yellow shade at the neck of the facing.

Of course, the doctor is right in regard to the relative strength of the high- and low-fusing bodies. I found those tests very interesting. We found that neither the average bicuspid nor the average molar cracked under less than 700 lbs. pressure and it required 2200 lbs. to completely crush the molar. Dr. Black has demonstrated the average crushing force of the human jaw to be about 175 lbs., although he has found some cases where a man could reach a pressure of 500 lbs. But in all those tests the pressure was distributed over all the teeth on one side of the mouth, and it is extremely doubtful if any one root could stand a pressure of 100 lbs. So there is not the danger of a porcelain crown being fractured when properly constructed that people who have not investigated the subject imagine.

I should also like to state that after a number of failures which would have disheartened a man of less perseverance, Mr. Brewster, of Chicago, has perfected a body which, it seems to me, is almost an ideal porcelain. It is finely grained, shrinks very little, carves nicely, and he furnishes it in a number of shades which approximate closely all the shades found in the human teeth.

I should like to speak of another thing that the essayist forgot to touch upon. In order to avoid the discoloration of your porcelain you had better use distilled water in mixing it. It is all very well for Dr. Capon, who lives on the shore of Lake Ontario, or for me, living on the shore of Lake Michigan, to use the ordinary water obtained through the city pipes for mixing porcelain, but those whose water supply is obtained from springs should use distilled water, because very often there are mineral and metallic salts in these spring waters which will cause discoloration in the porcelain. All the coloring matters used in coloring porcelain are minerals and metals.

I am very grateful to Dr. Capon for the tube crown. That is one of those little things the practicability of which appeals to you at once, and it is so simple that you scratch your head and wonder why you did not think of it long ago. I should like to make just one suggestion to the doctor in regard to it. That is, in setting that post I would not take any chances of fracturing that root by screwing in the post. I would enlarge the hole to receive the post. I would set the apical half in cement, so as to get the benefit of the adhesive qualities of the cement. Then I would pack in the amalgam before the cement has completely set. You would have a mass of cement binding the two sides of the root together, very much lessening the danger of fracture. Furthermore, I would not attempt to make a tube crown go over a root so treated unless I made it with a band attachment, because such a root certainly ought to be banded. The post should not be allowed to take the full stress of the bite.

I sincerely compliment Dr. Capon on his paper. It is scientific through and through, and was presented in an admirable manner. Unless you have been through this yourself, you have no idea of the amount of labor, physical and mental, that it requires to prepare and present a paper in this manner, and I feel I can assure the doctor, from the reception he received at the close of the presentation of the paper, that this body of men appreciate it as fully as I do.

Dr. HART J. GOSLEE, Chicago. I feel that the members present have listened to a very practical paper this evening in the one presented by Dr. Capon. There are quite a number of things in it that are new, and while all are not, it is of course impossible for one to write a paper upon a purely practical subject and have everything absolutely new and original. The discussion by Dr. Nyman was so admirable and excellent, and covered so well all of the practical points that I should like to have tried to cover myself, that it really leaves but very little for me to say.

I want to agree with the paper in general, but have a few exceptions to take in detail. The most important of these is the root-



preparation described by Dr. Capon in the essay and afterward by Dr. Nyman in the discussion. I think that one of the most important features tending to the successful execution of porcelain work,—which we all concede to be the most artistic work possible in the line of prosthesis,—is the proper preparation of the root, and it is a feature that is woefully neglected by a very large percentage of us. The reason for this gingivitis that was referred to and is so often found around the necks of teeth carrying crowns is not because of a lack of reproduction or restoration of the contact-point, or preservation or protection of the tissue in the interproximal space, but because of such improper preparation of the root in the first place as to have the crown offer irritating influences to those tissues. It is the irritating influence that comes from the ill-adaptation of a band that causes nine-tenths of the periodontal and gingival inflammation that we have around the necks of those roots which support crowns. If we could impress ourselves with the importance of the proper preparation of roots, and if we would then be patient, painstaking, and persevering enough to put the proper amount of work upon those roots in their preparation, I may say that all of us would do far more successful crown-work without any exception.

Now, when we consider the preparation of roots for the ten anterior teeth, where porcelain is indicated most generally, we must remember that *stress* plays quite an important part in the requirements. The six anterior teeth receiving stress in an outward direction necessitates, of course, that the crown be substantially built upon the end of the root in such a manner as to overcome the tendency of force in that direction, and that, of course, is gained by leaving the lingual portion of the root longer than the buccal or labial, as was suggested by Dr. Nyman.

I agree that in the six anterior teeth it is absolutely necessary that the *lingual* portion of the root should be left longer than the labial and also longer than the gum. It is also quite necessary that the *labial* surface of the root should be cut below the gum margin in order that we may carry our porcelain facing, or the body, underneath it, so as to have an artistic appearing crown. But, when we prepare the face of the root in this manner, we leave at this point [indicating] at the summit a sharp angle, which affords a prominence that interferes with the perfect approximation of the facing to the cap, and which requires that the neck of the facing be ground exceedingly thin in order that it may lap over this prominence [indicating], and which also means that we have a very small amount of porcelain body in the joint between facing and cap. Appreciating, then, the requirements in the preparation of the root, so far as leaving the lingual portion longer than the labial, we must also appreciate the requirements so far as the porcelain itself is concerned. Dr. Capon quotes and emphasizes in his paper that the strength of porcelain body increases in proportion to its bulk, and hence that we must have as much bulk as possible. Then why should we leave this prominence here at this point? There is absolutely no necessity for it, and if



we will simply cut it down on a straight line like this, from labial to lingual [illustrating], we will make more room for our porcelain and at the same time observe the principles in the preparation of the root which are desirable and necessary. In the bicuspid and molars, if we are inclined to place porcelain crowns upon them, or they are indicated, such a preparation is not at all necessary, and especially posterior to and including the second bicuspid, because the stress that comes upon these teeth usually comes, in typical or normal occlusions, in a direct manner, tending to drive the tooth farther into the socket, and not to move it laterally to any extent. Hence, these roots might just as well be cut off as low upon the lingual as upon the buccal, and in doing so, as I said before, we make more room for the porcelain.

But in the preparation of these roots in this manner there is one point, not mentioned by the essayist, that I have emphasized in several papers and the importance of which I cannot exaggerate. That is, that before that root is cut down as low as you intend to carry it, *the band must be fitted*. My procedure always is to cut the root down to within about a sixteenth of an inch of the gingival line on all sides first, and then to give to the root the peripheral preparation necessary. You then have a working end upon which to rest your instruments in the removal of the remaining ledge of enamel. You have something plainly visible and accessible to work upon. As you place your instrument upon the portion of tooth-structure that is to be removed you are not continually jabbing it into those sensitive tissues. You can place it upon the root and carry it under the gum, and the patient will not blink an eye as it passes beneath. You greatly facilitate the peripheral preparation by leaving the root thus long at first. You further facilitate the taking of the measurement, and further still, and more important yet, you facilitate the fitting of the band, because you have this projecting end of the root to form the band to its shape and guide it into place as you pass it beneath the gum. In this way, if you are careful in operating, you can fit bands for any style of porcelain-faced crowns without inflicting any pain whatever to your patient, which you cannot do if you cut the root down in the first place as far as you intend to, and then attempt to give it the necessary preparation.

One point Dr. Capon mentioned that I indorse very heartily is that an artificial crown can never take the place of the natural one; and those of us who may feel inclined now and then to destroy or sacrifice the natural crown in a good healthy condition, for the purpose of bridging, want to stop and think seriously of what we are doing. It does not make any difference how skillful we may be, we can never place an artificial substitute upon that root that will take the place of the natural one, that will serve the same purposes, and that will preserve the same natural conditions around the gum line. It is impossible for art ever to take the place of nature.

The indications and contraindications for the use of porcelain were dwelt upon very nicely by the essayist. The indications for the use of porcelain crowns upon the ten anterior teeth, if properly and skillfully constructed, are almost universal. The contraindica-

tions are in those cases of exceedingly close bites where you have no room at all for porcelain. In such instances nothing but metal will serve the purpose.

With regard to the indications and contraindications for the use of porcelain, let me say a word as to the relative and comparative strength between a properly constructed porcelain crown and a porcelain-faced crown with a metal back. Some, and especially those who are not perfectly familiar with porcelain work, and more especially those who may have heard some one speak of it who has not been successful, may possibly think that a porcelain crown is not as strong as a porcelain-faced crown with a metal back; but permit me, if you please, to assure you, as the result of quite an extensive observation, that a porcelain crown if built properly and if made of high-fusing body is a great deal stronger in every respect than a porcelain-faced crown with a metal back, and that it is almost impossible for the facing ever to become detached or broken away from the crown in the mouth, which is not at all impossible if it is a facing attached simply by means of its pins to a metal backing. In a porcelain crown the facing is attached by the fusion of the body over the entire lingual surface of the facing, not depending alone upon the retention pins to hold the facing, but the fusing of the body over the entire surface, of course, makes its attachment stronger than is possible in the attachment of a facing to a metal backing where the pins themselves furnish the only means of retention.

The changing of color in facings that may be used I think is due altogether, or mostly, to a lack of discretion in their selection. It is a matter of experience altogether which enables one to select a proper make of facing, and a porcelain body that will work with it, so as to avoid the changing of color that is so often complained of. There are makes of facings which do not, as a rule, change one particle in the furnace. There are other makes which change readily. You cannot use a facing composed of a fine-grained substance such as the English teeth, with our high-fusing porcelain bodies, because the fusing-point of the latter is so great that all the coloring material is burned out and you have a facing that is perfectly white and opaque when it comes from the furnace. But that same facing would do if we used a body that was adapted to it. Hence we must know what facings we use and what bodies are adapted to them. I have had good success with White's, Justi's, and Consolidated facings, when I have used a body adapted to them. As a body for universal use and adapted to all kinds of work, I have had the best success with Close's. I have also had splendid success with Brewster's body, very recently placed upon the market, and I heartily indorse it. If the body and facing are properly selected and the body not overfused, we will not have very much trouble with the changing of color of the facing in the furnace. If a change does occur it is due more likely to the fact that we have given it more heat than was necessary for the fusing of the porcelain, and if less or only the required amount of heat had been used to fuse the body and not overfuse it, we probably should not bleach the facing.

The essayist spoke of the advantages of a band in constructing crowns. I do not think that in the minds of many who work along that line to any great extent, there is to-day very much question as to the advisability of placing bands upon all crowns where we have a root that is at all suitable. In other words, when we have a root that can be banded, I think the band should invariably be used, because of the additional stability that it adds to the crown, and I do not believe that any experienced crown-and-bridge workman will question that point.

There are some limited indications for the *partial* band that the doctor refers to. I remember that several years ago Dr. Guilford advocated such crowns, claiming that we should then not have that prevalent gingivitis, due to the presence of the band. He advocated the partial band and used it quite extensively; but it has been almost discarded now, because it is so difficult to get a perfect adaptation of such a band. There may be some instances in very strong, large roots, centrals and canines principally, the crowns of which were naturally short, where it would not be desirable to have a band pass around the front. In such instances the partial band may be indicated, but I do not think that in general practice it is often indicated. It would be the exception rather than the rule, in my opinion, because of the additional stability that the entire band would afford to the crown. In fact, the band that the essayist referred to is scarcely a band at all, because, as I understood his paper, he adapts it by burnishing the floor over the lingual surface of the root, to overcome the stress in the opposite direction, and I do not believe it is possible to get a perfectly close adaptation to the root by burnishing. I have had many cases where I felt that such a band was indicated, and have made it by preparing the root and making a continuous band in the ordinary manner, and then just prior to soldering or attaching the floor to the edge of the band I have slipped a piece of mica under the labial surface between floor and band, as far as I did not want the floor to become attached to the edge of the band, and then soldered the rest of the way around. I then had no difficulty, after refitting it, in cutting out the front of the band and burnishing the floor up close to the root. The result is that you have an absolutely perfect adaptation of the remaining band and floor to the surface of the root at all points.

Another very important thing that the essayist mentioned was the temporary crown. I do not think that any one should dismiss a patient for whom he is constructing a crown in the anterior part of the mouth without placing upon that root a temporary one. I believe that any one who dismisses a patient under those circumstances, without putting on a temporary crown, does the patient and himself an injustice. I do not think we should ever dismiss a patient with an open space in the front of the mouth. It is a temporary disfigurement that is very embarrassing to the patient, and it can be so easily avoided by hastily making a temporary crown, that it is a shame to dismiss them without doing it. The simplest possible method to make such a crown is to have some German silver wire of about 16 gauge, enlarge the canal, place a



piece of wire in it, select a facing,—and it does not have to be perfect, because the patient may only wear it a few hours,—slip the facing over the end of the wire, clinch the pins around it and lay it upon a bit of charcoal or an asbestos pad and solder it with soft solder. In five minutes the whole thing is done, and then it can be mounted with gutta-percha or temporary stopping, and you not only relieve the patient of any temporary disfigurement and embarrassment, but you serve a more important end still, in having the gum around that root compressed nicely, so that when the patient again presents for the mounting of the permanent crown, you can have perfect access to the end of the root and there will be no question at all that the adaptation of the crown to the root will be as perfect as possible; and if it should be imperfect at any point, you will have the additional advantage of being able to see it and burnish it down at that point.

In applying the porcelain body the essayist suggests that after it is built up it should be set upon the front of the furnace and cautiously dried before placing it in the muffle. I find that this is only a waste of time. In the process of building it up it can be passed over a Bunsen burner or an alcohol flame while you are applying the porcelain; and when it has been applied to a sufficient bulk, it can be held in the flame until all the moisture has been evaporated, and you need not be then at all doubtful as to the possible result of placing it immediately in the muffle, because after all the moisture has been evaporated and you have carved it, you can immediately place it in the muffle of your furnace, even though it be hot, and turn on the current without any danger at all; and you would be surprised to find how almost impossible it is to fracture a porcelain facing in the muffle of a furnace; because the heated muffle usually excludes any draft of air which would cause the possibility of expansion or contraction. After finishing the baking, I never wait for the process of cooling off to any great extent, if the windows are not up and if there is no draft in the room; you can remove it from the furnace and place it on an asbestos pad and allow it to cool, provided there is no draft, and you will never have a fracture.

The *cup* crown referred to, where the band is extended to protect the porcelain upon the lingual surface, is an ingenious device, and I believe is purely original with the essayist. It certainly adds to the strength of the band to allow it to remain longer in that way, and, more important still, it precludes the possibility of a fracture along the lingual portion of the porcelain from the stress of mastication. In my early work in porcelain I had many of these lingual cusps break off, due entirely to the fact that there was nothing to destroy the line of cleavage, and the slightest force of mastication coming upon the vitrified substance would cause breakage of the lingual cusp. But I simply soldered a vertical bar to this point [indicating] in the center of the lingual surface of the cap, allowing it to project about half way to the occlusal surface, thus overcoming the possibility of fracturing off the lingual cusp.

In one of his diagrams the doctor mentions bringing the pins of the facing out until they come in contact with the post, and he also

stipulates that immediate contact is absolutely necessary. Of course it is, but that contact must always be made at a point as close to the floor as possible, and if possible you should bring them in contact with the floor itself instead of the post, because that gives you more room for porcelain.

Dr. NYMAN in his remarks spoke of allowing a platino-iridium bar to extend through the crown at this point [indicating]. As far as the occlusion is concerned, that would be a splendid point, because the bite would come upon the end of the platino-iridium bar; but if the porcelain is divided in the center, as it would be with the bar that he suggested, it seems to me that it would be too weak to withstand the strain of strong mastication.

Dr. NYMAN. I never put that into practice without using an additional iridio-platinum piece.

Dr. GOSLEE. You did not say that.

Dr. NYMAN. Yes, I said that. I also drew a section to show where that iridio-platinum band was soldered on. Perhaps you did not understand me.

Dr. GOSLEE. I beg your pardon, then. I did not understand you, and I did not want to let that point go, because the dividing of the porcelain would, of course, leave it very much weaker without some other additional protection.

I may say a word with regard to round and square wire for posts. I feel that the round wire is far preferable to the square, though I have used the square quite extensively. If you are mounting your crowns with cement, the cement takes hold of a round wire far better than it does of a square or triangular one, the angles of which will cause it to more easily fracture, the attachment being not nearly so secure. The round wire is also better, because, as you perforate the floor for the post to pass through you can get perfect contact at all surfaces between the floor and the wire, which is very desirable.

Just one thing more, and that is with regard to the occurrence of fractured roots which Dr. Nyman referred to in his discussion. I cannot allow that to go by without saying something, because I have never found those fractures to occur as the doctor has suggested that they have occurred with him. With me, invariably the fracture of anterior roots has occurred from mesial to distal and not from buccal or labial to lingual,—for the reason that stress coming from the lingual to the labial usually breaks away the labial plate. If it be a lower crown it may break away the lingual, but usually breaks away the labial plate from mesial to distal, and not from buccal to lingual; that has been my experience. The reason for that is, I think, because the adjacent teeth on either side overcome the possibility of sufficient stress in those directions to cause a fracture.

I am surprised that Dr. Capon should be seemingly so paradoxical as it occurs to me he was in one reference that he made. In the early part of his paper he says that porcelain increases in strength in proportion to its bulk, and then he tells us that he has been entirely successful with the jacket crown, where you have the very smallest amount of porcelain. Of course, I do not know what the doctor's

experience has been with the jacket crown, and I would not question his word for a moment, but my experience has been just the reverse, and I feel that one of the things that has done more to retard the progress of porcelain work than anything else I know of, has been the making of crowns where the desire has been to leave the root as long as possible and to have as little porcelain as possible. You want just the reverse, and recently I have adopted the practice of cutting roots just as short as I possibly can, in order that I may make as much room for the porcelain as possible; and in that way I believe I succeed in giving the utmost stability to my crowns.

Dr. CAPON. I feel honored in having such gentlemen as the last two speakers discuss my paper. I must admit frankly that I had a selfish motive in bringing before you these feeble efforts. I felt that, if I could bring such men on the floor as I have been successful in bringing, you would share with me the benefit of their valuable advice. They have taken up the various points very thoroughly and discussed them in a splendid manner, and, as I say, I feel proud that my paper has produced such discussion at the hands of such eminent men. I have made notes of some points which I might refer to, but I feel that you have been "porcelained" to death tonight, and I think I will meet the general feeling of the meeting by simply thanking you, one and all, for the kindness with which I have been received, and the hospitable way in which a stranger among strangers has been treated.

There are two or three little things I should like to speak about, and I will make a point here on the trimming of a root-face. Dr. Goslee dealt quite seriously with the trimming of a root. He touched a very sore spot with me; for I consider root-trimming, the preparation for bridge or crown work or anything that is to be put upon a foundation, as the most essential point, and I am very glad that Dr. Goslee put such emphasis upon it. It is the foundation of success. That is the point where I have felt I could put more criticism on those people who are putting on crowns for gain, who will put crowns upon roots which have no right to carry crowns, let alone bridges,—teeth or roots that have lost their investment. They simply grasp at the idea of making a few extra dollars. There are too many crowns placed in mouths to-day. I am tearing them out instead of putting them on. I have a drawer full of relics of crowns that I am ashamed to admit were placed in the mouths of patients by reputable professional brethren. I have pulled the gold caps off from laterals and centrals galore. As Dr. Goslee said once before, it is "criminal." Root-preparation is a sensitive point with me, because I am thorough about my root-preparation, and when I prepare a root for a shell crown I take away absolutely every possible part of the coronal portion that is bulging before I put my shell crown or gold cap over it; and if I cannot get it away, I only put my crown as far as the bulge goes. If it be a case for a bridge, there is no objection to it at all. So many dentists lay stress on the fact that if the crown does not come to the gum margin it must come off. If the gum margin is kept free with a brush, it is the best possible prophylactic. Take a molar crown that is bell-shaped, which, pos-



sibly, by having its neighbors taken away or by non-occlusion has become elongated. It is a live tooth, and the placing of a bridge is necessary in order to give the patient a proper masticating surface. He cannot wear a plate and you are forced to put on a bridge for the salvation of the stomach of that patient. Now, I have no objection to seeing a crown half way down upon that tooth, in my estimation it is good practice, and more satisfactory than to have a crown extend down to the gum and not fit at the margin. If it does its work and has plenty of retention, there is no objection to it. But if I cannot take off all this coronal portion, that will lead to positive success, I will leave it on and do the best I can.

Now, as to the use of semi-bands in the preparation of central or lateral incisors or canines, I wish to say that I only referred to that from the artistic standpoint. I do not claim to have produced anything original. In these days when so many ingenious heads are working all the time it is almost impossible to produce anything new. We have quite sufficient material to work on if we will only work on it in the right direction. The little things that are being invented from day to day and patented so that nobody can use them without the payment of a handsome price are mostly useless anyway. My idea was not to produce something original, but to produce something that would be of advantage to art, from the esthetic standpoint. I referred particularly to the laterals and centrals and canines in a lady's mouth, because there is nothing more objectionable than to see gingivitis along the edge of a gum around, say, one tooth with all the rest of the gums in a perfectly healthy condition, because of a splinter under the gum tissue. If you put a thorn into the flesh it is going to set up an irritation, and cause pus and so on. Nature will have its way. If a band is prepared by the hands of Dr. Goslee or Dr. Nyman it will be perfect, but I am not talking to those men. They are artists. I am talking to the profession generally. Dr. Nyman and Dr. Goslee can put on a band in a satisfactory manner, but I refer to the men who only do it in a half-hearted way, who are looking at the ten or fifteen dollars which a porcelain crown with a band will bring. Those are the men I referred to in my paper. Then when I wrote my paper I said to myself that I would make it as practical as I could, and I put in these practical points as a side issue, but I intended to lay a special stress on the artistic side of it.

In regard to the trimming of roots of centrals, laterals, and canines, you will agree with me, I think, that the corner of the mouth or the contour of the arch is on the canine, which is the most difficult place to get a nicely fitting band that will not become exposed. The gum over this portion is very tightly stretched generally, and in such a condition that if you place a band under, it will cause recession of the gum. A canine is a difficult root to band so that it will not be conspicuous. A lateral or central is not quite so difficult, but at the same time it is equally necessary that the artificiality be not emphasized by a band causing congestion or recession. I have been doing porcelain work for fifteen years, and I have used this simple style of crown because of its simplicity, to get

the desired effect by a simple method. An hour is sufficient time to make one of these crowns complete and have the patient out of the office. Now that is something to accomplish, to have a result which is artistic and simple and which will meet the requirements. Dr. Nyman said that the fracture of an incisor root carrying a crown was invariably toward the lingual aspects in the cases that he found in his record. That seems entirely unreasonable to me. If you will notice, they took me up each time on a bicuspid. Now I place most bicuspids with a band, but sometimes I use a semi-band on them, with good results, but it is on the anterior teeth, the incisors and canines, that I make a claim for the semi-band. Now, it seems to me natural that if an incisor tooth standing in this direction [indicating] has an occluding tooth below which stands in that direction [indicating], the force, of course, is in an outward direction, any possibility of fracture being toward the labial aspect. Now, I trim the root to a V shape, or better to a cone shape, so that it is really a band to withstand stress in the outward direction. You remember the band of the old-fashioned Low crown,—the friction of the crown being the close contact to the top of the root; that was actually a band. What I tried to get at in the preparation of that root was, I think, clearly portrayed by the diagrams and the wording in the paper. If a root is cut below the gum margin on palatal aspect and straight across to labial aspect and below the gum margin it will leave no root to protect the septum of gum; you must then interfere with a certain amount of the pericemental membrane, which will cause irritation and lameness and a falling of the septum in the interdental space. That lameness is what I was trying to avoid. So I followed the gum margin around to avoid cutting straight across into the gum tissue of the interdental space.

Dr. GOSLEE. Well, I did say the root should be carried lower, perhaps, at the center, which approximates the interdental tissue. I think you will agree with me that it is unnecessary to lacerate the tissue in doing that. It can be done without ever lacerating the gum.

Dr. CAPON. But you have taken away the natural surroundings.

Dr. GOSLEE. Yes, but I am going to restore that with the crown.

Dr. CAPON. But it is not natural. The pericementum will not adhere. You have got below the pericementum when you cut down to the septum. You will find some teeth that are very low on the labial side, and with a large amount of tissue between the interdental space.

Dr. Nyman suggested that he would not care to tap a much decayed root for fear of fracture. Now I do not simply force that screw down without tapping first. You have a tap that fits your post, and then you have a drill that fits the tap. There is really no pressure, and you are utilizing the strongest portion to insert the screw post. I also said I use a piece of cement at the end of my post, force it down into the canal and turn it, which naturally forces the cement up along the sides of the root into which the amalgam is incorporated.

Dr. Goslee went on to say that the changing of the color was not

necessary, if you make a good choice. Well, that is not what I meant. I can make the choice as nearly as anybody can, I think, but say the tooth adjoining it is a central and perhaps the biting surface of the tooth has been chipped. There has been a filling put in there, or something has changed the color along the biting surface. You have a nice color along part of the way and it leads into a gray or possibly into a blue at the end. That is sometimes a difficult matter. You may get the two shades in your facing, but when you get to the biting surface there is a blueness that you cannot match. You want something to imitate the tooth adjoining. You may take your cue from a lateral, central, or bicuspid if the adjoining tooth is not what is wanted and you wish to get at the original shade of the tooth. The idea is not to have an oddity when you look at the patient. You do not want a white tooth looking at you. I should rather err on the dark side. I have put them on many a time when I said, "If I had a little gray or a little blue on the biting edge, it would make a much better match." I take out my colors and paint it on and it matches perfectly. It is not that you want a perfect tooth there, but you want possibly to match an imperfect tooth at its side.

My suggestion with regard to drying the crown at the mouth of the muffle was for the purpose of drying out the saliva, the blood, or anything that may get into your material and form carbon, causing a change in the color, which is called "gassing." Take a piece of a match and throw it into your muffle, whilst the body is in a fusing state, and your piece will come out with the color gone. Saliva will do that, blood will do that, and the method which I have described is for the purpose of burning out any possible carbon that might be present. If there is any carbon there it turns black around the edge, and you wait until it burns off.

Discussion closed.

(To be continued.)

---

### NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

THE fourth annual meeting of the Southern Branch of the National Dental Association was held in joint session with the Tennessee State Dental Association, in the building of the University of Tennessee, Department of Dentistry, Nashville, July 29, 30, and 31, 1901; Dr. Thos. P. Hinman, Atlanta, Ga., presiding.

The opening session was devoted to listening to addresses of welcome by the governor of Tennessee, the mayor of Nashville, the president of the State Association, and responses to the same by Dr. V. E. Turner, on behalf of the Southern Branch of the National Dental Association, and the annual address of the president of the association.

#### FIRST DAY—*Afternoon Session.*

Dr. D. R. STUBBLEFIELD, chairman of the Section of Pathology, reported that he had found a lack of interest among the dentists of the South in the subject which his committee has in hand, and a



preference for so-called practical subjects. He thought this view was wrong, and that dentists would have to learn that if, in their student days and in the years of their early professional life, these so-called theoretical subjects were neglected their later practice would be badly handicapped by a lack of theoretical knowledge which would be badly needed.

Upon the call for the committee on operative dentistry, Dr. H. H. JOHNSON, of Macon, Ga., read a paper, an abstract of which follows, on

#### SOME METHODS USED IN GOLD FILLING.

The author sketched the history of gold as a filling material from the earliest beginning of dentistry to the present time. Down to 1850 soft gold was universally used. The cohesive quality of foil had been noticed, but was always considered a defect, and gold having such a quality was rejected as unfit for use. Gold was always inserted by hand pressure until 1864, when mallet force was introduced, and met strong opposition by the conservative men in the profession. Wm. H. Atkinson was one of the first to bring it before the profession. Fillings made in the days of soft gold and hand pressure, though difficult and tedious to insert, lasted better and succeeded more frequently than do cohesive fillings to-day.

Watt's crystal gold was the first form of cohesive gold used, and the profession took to it as the trout seizes the tempting bait on the treacherous hook, and to many it proved a snare and a delusion largely because of the use of improper pluggers and inexperience in its manipulation.

About 1863 began the era marked by the advent of rubber dam, the mallet, strictly cohesive gold foil, and contour fillings. The old soft gold and hand pressure filling gradually gave way to the more modern cohesive foil and hand-mallet force, followed by improved forms of pluggers and the mechanical and electric mallets, but it was soon found that the beautiful cohesive gold contour fillings hammered into place with the most modern pounding machinery became in many instances undermined by recurrence of decay, principally of the cervical margins, and now the scientific investigators of the profession, to meet this last exigency, have resorted to the latest and most modern practice of "extension for prevention,"—which, however, has not as yet been very widely accepted. Cases where it can be practiced judiciously are not plentiful, and in many cases, for esthetic reasons, it must be avoided.

The essayist predicts that the next advance will be begun when we stop and weigh the experiences of the profession and profit by the principles which seem to have been proven, and the ideal will not be reached by inflicting undue punishment upon our patients in burring away the strength and the beautiful geometric forms of the teeth, to try to get beyond a vulnerable point, but by combining modern instrumentation and skill with the two best forms of gold and the two best forms of condensation. Pack non-cohesive gold with hand pressure at the vulnerable points, thereby obtaining unmistakable adaptation; then finish the filling with cohesive gold,

thus obtaining the hardness and solidity necessary to resist the force of mastication, and the ideal method based on the experience of the past seventy years will have been reached.

He advanced the suggestion that many failures of gold fillings from faulty adaptation are due to the expenditure of too much mallet force directly against the cavity walls in beginning the filling, not because of the crumbling of enamel rods under the blow of the mallet, but because it is contrary to mechanical principles to expect to obtain an absolute adaptation to a resilient wall by driving a substance of the nature of cohesive foil directly against it with a mallet. On the other hand, if steady, firm pressure, as from the hand, is applied to a like substance this resilient property is not excited, and the material may be pressed and packed into absolute contact with the wall. If, then, we take non-cohesive gold and with hand pressure pack it into all the vulnerable points and around the cavity walls until a mass of sufficient thickness to prevent the rebounding force of the mallet has been condensed, cohesive gold may be driven in without suffering the ill effects of the rebounding, as there is a non-resilient cushion to break the force.

#### *Discussion.*

Dr. WM. CRENSHAW could not agree with Dr. Johnson that it is impossible to adapt cohesive gold closely to the margins of inaccessible cavities. Some men can and do so use it successfully. By practice they have become especially expert, but he would agree that the latest and best method is with a combination of the two kinds of gold. He had passed the point when he thought cohesive gold was the best material for all parts of all cavities, and would now willingly acknowledge that soft gold is the best for cervical margins of fillings. Dr. Johnson implies that "extension for prevention" is not acceptable to him. He did not think we correctly understand what Dr. Black meant by this phrase. If he means to extend the cavity beyond the point of contact, that is good; if he means to extend the cavity below the gum rather than to leave the margin of the filling just at the gum line, that is good also. We all know that at the point of contact of the teeth is where decay is most liable to occur, and if the margin of the filling comes at that point the *débris* of the food, etc., would find a lodgment there and decay would be almost certain to recur. By preference the cavity margin should be half way between the point of contact and the gum. If it is at the gum line, the same objection exists as if at the point of contact of the teeth, but if the gum laps over the margin of the filling, this vulnerable point will be protected. He therefore contends that it is better practice to extend under the edge of the gum margin rather than to stop at it.

Dr. FRANK HOLLAND, Atlanta, said an experience of about twenty years with cohesive gold had taught him that its value as a filling material could not be surpassed, and that it can be adapted to any case where soft gold can be used. It is sometimes almost impossible to form a cavity so that it will receive soft gold and retain it, and the pressure brought to bear on the tooth in inserting

a soft gold filling is so great as to endanger the splitting of the tooth. By a skillful operator cohesive gold can be securely packed with hand pressure against the cervical margin of the cavity extending to the neck of the tooth. The combination fillings described were not successful in his hands.

Dr. R. K. LUCKIE, Holly Springs, Miss., wished to discuss the point the essayist made in regard to "extension for prevention." We must be conservative, and exercise our best judgment in this line of work, always considering the extent of decay, the character of the teeth, and the general hygienic condition of the mouth. It is often the case in approximal cavities of the teeth that we must pay special attention to the gingivo-labial or buccal and the gingivo-lingual angles. He often sees a recurrence of decay at these points, in work from his own hands as well as from the hands of others. We should extend these angles freely whenever it is indicated. Lateral extension,—cutting down of the labial, buccal and lingual sides of the teeth,—is quite often necessary, and almost invariably we get better results from such extension. This extension is specially necessary in teeth that are rather badly decayed and have a tendency to rapid decay.

His experience and observation teach him that it is not quite so necessary to extend a gingival border, especially in teeth of moderately good character where the proper attention is given to cleanliness. He has seen many hundred cases where there was no recurrence of decay at the gingival margin, and yet the filling did not reach the gum tissue. With him it takes time to make such extension. It is a tax on his nervous system, as well as on that of his patient, and he does not care to cut any more than he thinks is absolutely necessary.

Dr. W. V-B. AMES, Chicago, said there were many gradations of working quality between thoroughly cohesive and thoroughly non-cohesive gold, and therein lies the opportunity for Dr. Johnson's argument. As he understands Dr. Black's propaganda, "extension for prevention," it is that which Dr. Webb advocated years ago, carried into a more extensive system. For himself he advocates the extension of approximal cavities so as to bring the margins safely away from the point of contact, and to make the filling of cavities simpler, but not to extend all the cavities to the degree of making them accessible to straight instruments. There are times when mallet force must be discarded and fillings inserted and packed with the force which we can only apply with a hand plugger.

Dr. W. J. MORRISON, Nashville, said we often have fillings of non-cohesive gold brought to our attention that have been doing good service from twenty to thirty years, while we rarely know of cohesive gold fillings lasting more than half that time. This seems to indicate a more perfect adaptation of soft gold to the walls and margins of the cavity. Many claim that there is something of a therapeutic value not fully understood in non-cohesive gold that prohibits the attacks of caries, some quality that renders the tooth immune from microbic infection. It is true that the use of two kinds of gold in combination promises better results than can be



expected from either alone. The filling should be begun with non-cohesive gold to obtain the advantage of the closer contact with the walls and margin, and finished with cohesive for the sake of its greater resistance to attrition from mastication and to build out the contour of the tooth.

Dr. W. E. WALKER, Pass Christian, Miss., thought that failures in combination fillings of non-cohesive and cohesive gold resulted from the practice of some operators of leaving too thick a mat of soft gold at the margin. He made this mistake himself until Dr. Black showed him that the continued impact of mastication would still further condense the non-cohesive gold and thus allow the fillings to settle from the margins.

Dr. J. Y. CRAWFORD, Nashville, said that the difficulty many had in using different kinds of gold arose from the fact that operators endeavored to use cohesive gold without the instruments and methods which would make success possible with this material. We first used non-cohesive gold with hand pressure and instruments designed for such use; then cohesive gold was introduced and it was found necessary to adopt different methods and instruments especially designed for use with the new material. Many dentists procured the cohesive gold and attempted to use it just as they had the non-cohesive gold, with failure as the necessary result. There is no sort of question that non-cohesive gold in contact with the walls and margins of cavities is a better preservative of tooth-substance than cohesive gold, and an ideal filling is one that has a foundation of the first and the superstructure of the latter. Now, many dentists are trying again in making these compound fillings to work non-cohesive gold with instruments and methods that they were using with cohesive gold, and they will certainly have their difficulties and disappointments.

Dr. JOHNSON, in closing the discussion, said he thought that in "extension for prevention" there was need of careful judgment. He did not condemn it, but did not use it to any great extent. He believed it was Dr. C. N. Johnson who says that a cavity filled so as to have the margin of the filling extend beneath the healthy gum would never have recurrence of decay at that point. He believed that probably it would not, if the gum resumed a perfectly healthy condition and held it, but he had never seen a healthy normal gum margin which extended over a filling. There are some men peculiarly expert in operating, with the different kinds of materials, whose methods cannot be successfully carried out by those not gifted with that exceptional expertness. This is the explanation of many failures.

The subject was passed, and the convention adjourned to meet at 8 P. M.

#### *Evening Session.*

The convention was called to order pursuant to adjournment, and Dr. JULES J. SARRAZIN, chairman of the committee on operative dentistry, read his annual report, of which an abstract follows:

*Mr. President and Gentlemen,*—Leaving aside any citation of

authorities, the committee dares to assert with unmingled happiness that the trend of dental operative methods is more and more marked toward the basing of professional labor upon histologic and sound mechanic and prophylactic truths.

Under the first-mentioned heading the realization is becoming stronger each succeeding day that the direction and structure of enamel prisms do not permit their contact with underlying metal, especially on morsal surfaces and incisive edges. Observation is convincing operators who may for years have attributed enamel-margin cleavages under strain to accident, that the underlying cause is the lack of true application of the knowledge of histology to the preparation of cavity walls and margins, and that a sure remedy does exist in the support of enamel by dentin and the funnel beveling of the enamel itself. This in turn leads to making a greater use of the cohesive property, because the filling margin is rendered thinner in direct proportion to the amount of enamel bevel.

Under the head of mechanics, the fact is becoming recognized that axial walls require the greatest amount of strength possible, and that the open space between them must be equal at least to the width of the gingival wall of the cavity to permit perfect adaptation of a non-plastic filling material. Mechanical considerations lead to shunning compound filling retention approximo-incisal or morsal angles, which seldom indeed do not approach enamel, weakening dangerous portions, and to the substitution of the horizontal dovetail, lingual or morsal, thereby leaving axial walls of full strength and possessing safe outward funnel beveling of enamel. As the profession is becoming convinced that every excessive molecule of amalgam is a minute spring to produce the disruption of filling margins, it grows more and more partial to the use of matrices for amalgam full contours, and applies to it the preceding principles of cavity preparation. Amalgam that would neither shrink nor expand, and would preserve a white color, would be ideal, especially in the bicuspid of decided brunettes, where the contrast of the rich yellow gold color is so marked and apparent. Mechanical considerations also lead to the conversion into compound cavities of all proximal cavities that would not leave between the morsal margin of a metal filling and the incisal or occlusal surface of a tooth a sufficient thickness of dentin to preclude danger of fracture under powerful masticatory forces.

The prophylaxis of cavity preparation is gaining recognition in compound cavities especially. It is of more limited application in simple cavities, where it consists only of the greater or less beveling of sound enamel (according to locality) and of perfect filling margins, but it covers many considerations in compound cavity types. Great interproximal space is an absolute requirement for the production of full bell-shaped contour. Interproximal gingival tissue is stretched and flattened while separation exists, and becomes convexed and fuller at the base of the interproximal triangle when the teeth reapproach one another. A margin brought barely beyond the free edge of the gum while large separation

of the teeth exists will therefore be entirely covered and protected by gingival tissue when marginal contact of the teeth returns. The cervical filling margin and its cervical angles are the most vulnerable portions of a contour, and should therefore be given all the protection possible. Next in importance is probably the full approximal bell-shaping of the filling contour and the production of a point of contact very near the morsal surfaces or incisal edges. The prophylactic reasons, therefore, are too well known and too lengthy to rehearse in a report whose object is to condense underlying principles governing operative practice. Unhesitatingly, we say that success in the preceding direction depends on the amount of interproximal space obtained. The cutting of approximal walls of a compound bicuspid or molar cavity slightly beyond the approximo-buccal or lingual axial line angles deserves special consideration. Thus, bringing the filling margin beyond the interproximal space for friction of it by the tongue and cheeks is certainly most desirable, but the consideration of finished appearance will in some cases suggest abstention.

The use of inlays of gold or porcelain is certainly commendable under their proper indication. The mission of the gold inlay would apparently be to reach cases possessing walls too frail to permit gold foil condensation, and to avoid unreasonably protracted operations by the coherence of molecules of metal. The retention of the porcelain inlay, besides cement adhesion, would depend upon the morsal dovetail anchorage, and in many cases upon a pulp-canal flange in addition. It will minimize the use of cements and substitute instead a more lasting contour and morsal surface. Its margins, however, cannot be considered durable, and are in reality no more reliable than those of the gold inlay, but the fact that exposure to view also implies exposure to friction is a protection in a double sense, because it also includes ease of detection of any marginal defect, and porcelain inlays are only indicated in simple cavities exposed to view.

On motion the report was accepted and discussion on the same was deferred until after other papers on similar subjects had been read.

Dr. J. P. CORLEY read a paper (a synopsis of which follows) on  
INFLAMMATORY PHENOMENA DUE TO AN UNERUPTED THIRD  
MOLAR.

A lady fifty-three years of age presented herself with a history of severe pain in the right side of the mandible. Three months previously she felt this pain for the first time; since then it had increased gradually and continuously until the head, neck, and face on the affected side became involved. Much swelling and edema ensued, with high fever. An examination by a rhinologist showed the post-nasal, antral, and auricular regions in normal condition. A dentist called in suspected an unerupted third molar, but on account of a partial ankylosis of the mandible he could not make a full examination. A surgeon made an incision across the masseter muscle at a point opposite the maxillary tuberosity. A discharge of



disorganized blood took place without giving the slightest relief. Then the dentist made an internal incision in the region of the mandibular angle, but again the patient was not benefited. Soon afterward the surgeon made the external incision deeper, bringing about a liberal discharge of pus; this brought some relief. A surgeon at Nashville was next consulted, who explored the affected region and found a hard substance, which he mistook for necrosed bone. He made an incision in the border of the alveolar process and injected hydrogen dioxid.

After all these futile attempts the physician in charge came to the wise conclusion that the disturbance could be caused only by an unerupted third molar. He therefore brought her to the writer. A mass of hypertrophied tissue that had been formed in the buccal region prevented the mouth from opening to its normal extent. The fistula was explored, and at some distance from its opening the instrument came in contact with a body which, from its peculiar hardness, he concluded was enamel. It was only after he had cut away some of the hypertrophied tissue that the anterior buccal cusp came into view. Cocain was used as a local anesthetic, but owing to the abnormal condition of the tissues its effect was unsatisfactory. Some of the overhanging tissue was removed with nitrate of silver. By this means direct access to the anterior half of the crown, which was the only exposed part of the tooth, was obtained, but all efforts to extract the tooth failed. After many unsuccessful attempts the only thing accomplished was to remove part of the crown. To extract the remaining root the following plan was devised: With a right-angle drill a slot was cut through the alveolar process between the labial plate of the alveolus and the tooth, and the root was lifted out. The alveolus was examined, but no sinus leading to the external fistula was discovered. The patient made a rapid recovery, and is at ten months after the operation perfectly well.

### *Discussion.*

Dr. JULES J. SARRAZIN, New Orleans, La., said he had seen the tooth coming from the case described by Dr. Corley, and concluded that the bulb at the end of the root was not an exostosis, but most likely a serumal calculus; the fact that the tooth was entirely surrounded by and buried in the alveolus would preclude the formation of a salivary calculus. The trouble may have been caused by this calculus. He could not imagine why the first incision in the neighborhood of the parotid gland had been made, as it could not reach the locality involved.

Dr. A. R. MELENDY, Knoxville, asked if the X-ray apparatus would not have located the unerupted tooth at once, so furnishing a clue to the cause of the trouble.

Dr. T. P. HINMAN, Atlanta: Yes, within three minutes, with the X-ray apparatus, the tooth could have been located so that the operation for its removal could have been definitely determined.

Dr. S. W. FOSTER, Atlanta, said he had long since learned not to attempt to extract an impacted wisdom tooth which was im-

bedded in the alveolus. His operation is to cut away the alveolus over the tooth with a fissure bur, freeing the tooth so that it could easily be lifted out.

Dr. JAS. E. CHACE, Ocala, Fla., asked if there was any indication of uric acid condition in this case to account for the formation of the calculus on the root of the tooth.

Dr. CORLEY answered, No, neither in the patient nor in the family.

Dr. W. E. WALKER, Pass Christian, asked if any saliva came from the fistula. He said that in surgical works the word fistula was used to describe an abnormal canal for a normal fluid; a sinus was an abnormal canal for the discharge of fluids the result of diseased conditions such as pus. The appearance of the calculus would determine whether it were salivary or serumal. If the former, then the saliva must have had access to the tooth.

Dr. H. E. BEACH, Clarksville, Tenn., had a case that was somewhat similar. A lady who had been wearing artificial teeth came to him suffering with pain which she supposed to be neuralgia, and which her physician pronounced neuralgic trouble caused by the state of pregnancy. He made a very careful examination of the mouth, and found an enlargement in the angle of the jaw. Lancing this, he got a copious discharge of pus. He decided there must be an unerupted wisdom tooth, but thought better to defer any operation until the patient would be better able to endure it. He therefore dressed the wound and dismissed her for the time. The pain left her and her strength improved for a while, and she continued to wear her artificial teeth. A few weeks later, however, the trouble returned, and the pain was so severe that he felt that it was better to remove the tooth at once. He therefore enlarged the incision already made and dissected away the overlying tissue, then with a fissure bur cut the process from around the tooth, thus uncovering it. He found it lying with its crown pointed toward the ramus of the jaw. With an excavator he easily removed it from its place. This operation was somewhat like Dr. Corley's, but not so severe or so difficult.

Dr. L. G. NOEL, D.D.S., Nashville, Tenn., then read a paper,

#### ON THE MANAGEMENT OF THE PERMANENT SUPERIOR INCISORS AND BICUSPIDS.

Cavities occurring in these teeth prior to the age of sixteen should be filled with gutta-percha or cement. Tin, advocated by some, the essayist rejects because it lacks the easy working quality and the adhesive properties of gutta-percha and cement; besides which it requires as much undercutting as gold to retain it, and is as difficult to place. Excluding tin, then, brings us to a consideration of the gutta-perchas and cements.

Before entering upon this, we must say a few words about cavity preparation. These materials being plastic and easily introduced, we do not need to cut away the lingual wall of enamel for access, as in making preparation for gold fillings, but we desire to leave as much of the enamel margin as will serve to protect the filling from abrasion in the friction of mastication or biting of food. This

is an important point to observe in the preparation of cavities for cement or gutta-percha fillings, since they are soft and offer very little resistance. Gutta-percha, if of good quality and not overheated, will, when carefully introduced and if well protected by the enamel margins, sometimes last ten years in approximal cavities in the front teeth, and since it has the least power of conducting heat and electric currents of all filling materials yet employed, it is perhaps the best material we have for approximal cavities in the incisors and cuspids of young patients. The teeth should be well separated with thin wide separating rubbers that will engage between the knuckles, so as not to ride up on the gum septum. This separation should be maintained until the soreness has subsided, by forcing a bit of folded cardboard between the teeth. Having obtained a satisfactory separation and decided upon gutta-percha fillings, our method of introducing material may be briefly described. We adjust the rubber dam with great care, the edges being carefully everted and tucked under the margin of the gum by silk ligatures secured by a surgeon's knot. We next select a separator to steady the teeth and maintain the space. For this purpose the "little giant" or the Perry separators have usually been found very efficient. The preparation of the cavity is a simple thing when conducted as above described, our attention being turned to the mere removal of decay and the smoothing of the enamel margins, no undercuts being required to save such as may be left by this procedure. A bit of cuttlefish tape will be found useful in smoothing the enamel borders. We next paint the whole surface of the cavity with a solution of resin and chloroform. This serves a double purpose. It covers the surface of the sensitive dentin with a coating that protects the freshly cut dentinal fibrillæ from irritation and affords a glue or adhesive cement for fastening the gutta-percha to the walls of the cavity. This is a decided aid in introducing the first small pellets of material, since they cling to the wall of the cavity and work into place without moving.

The instruments for working the gutta-percha may be few and simple, and they have been too often described in text-books to require more than passing notice here. Such small serrated pluggers as are found useful in working gold will be found serviceable in carrying the material into place. For a detailed description of the instruments and appliances needed in making gutta-percha fillings, see "Flagg's Plastic Fillings." Dr. Flagg's preparations of gutta-percha are very excellent, and if his directions are carefully followed will be found to work almost as kindly as cement.

Where the labial or lingual walls of enamel are broken so that considerable notches occur in them, exposing the filling material to friction, zinc oxyphosphate will be found better and more lasting than gutta-percha. Care should be taken in preparing the cavity for zinc phosphates to leave as much of the enamel margin as is sound and resistant.

The next question to decide is, When shall the teeth be filled with gold? Several considerations will enter into this decision. First, how is the temporary filling lasting? If it is standing well, main-



tains its color and integrity, it should not be removed while these conditions last, no matter whether it be cement or gutta-percha. Many a so-called temporary filling proves to be more permanent than the so-called permanent filling. Dr. Flagg has called attention to the fact that failures in gold fillings are always accompanied by extensions of the cavities, but such is seldom or never the case with cement or gutta-percha fillings.

We come now to a consideration of the method of preparing and filling these cavities with gold. A very important initiatory step will be the obtaining of the requisite space between the teeth by separation. This we usually start with thin, wide separating rubbers, discarding them after twenty-four hours for bits of cardboard or compressed wood, which latter appliances we change daily, gradually increasing the thickness until the space is sufficient, and then we permit the wedge to remain unchanged, suffering it to be worn until the soreness has passed. We do not always find this preliminary wedging necessary, for many cases present themselves where the teeth are so shaped and placed in the arch as to make access to cavities of their proximate surfaces easy. Again, we find the tissues very yielding in many young subjects, especially women, and furthermore in the method of operating, which we shall describe, we obtain additional space by cutting away some of the lingual border of enamel,—hence in a large proportion of cases the necessary space may be obtained with the aid of a Perry separator and the filling introduced all at one sitting. It is in the case of crowded and overlapping teeth, and those having long and delicate crowns, where the decay has occurred high up beyond the knuckle and extends beyond the gingival margin that we shall find the preliminary wedging essential to success.

So much for the temporary separation, as we shall term it. Now a word about the wisdom of making a “permanent separation.” From the experience of thirty years and close observation throughout this time, we have come to the firm belief that in the majority of normally placed teeth it is good practice to cut away a portion of the lingual wall of enamel, leaving a self-cleansing space. We think we can deduce from our long observation some very convincing arguments for this practice. We have observed that where sufficient separation is made by wedging to place these fillings without cutting away any of the lingual wall, after the removal of the wedges the flat surfaces of the fillings come together in such a manner as to retain particles of food, which undergo fermentation, and decay quickly occurs.

The lingual enamel is much thinner than the labial plate, and besides being thinner is corrugated, and very prone to cleave along the lines of corrugation, so that when cavities are large, leaving these inner plates of enamel unsupported, if they do not crumble under the force necessary to condense the filling they are sure to split away in sufficient quantity shortly afterward to furnish roughened edges that afford lodgment for fermenting substances, and an extension of the cavities is the result. When the lingual borders are cut back, somewhat as described by Dr. Arthur in his little

book, "The Treatment and Prevention of Decay upon the Proximate Surface of the Teeth," a permanent separation is maintained, and no opportunity is offered for the lodgment of alimentary substances. A self-cleansing space is maintained, and a comparison of results between this and the above described operation will show a state of things overwhelmingly in favor of the latter method. The plan of cutting away the lingual enamel entirely and building all back in cohesive gold may be a little better, but I have seen many sudden failures follow such work.

Returning to cavity preparation, we would emphasize and repeat the statement that easy access is obtained by this cutting away of the lingual wall of enamel. This is best accomplished with Dr. Jack's double-end enamel chisels, though the gem disk and small corundum disks may be employed, and, in cutting, the chisel should be permitted to pare off only a small portion at a time, care being taken to come out at the gingival margin and not to cut above it, so as to flatten the teeth at their necks, permitting them to close up in ranks or rotate. Care must be taken also not to cut away the labial plate, but to leave this entire if possible.

If the paper had not already drawn itself out to too great length we should like to make an argument here in favor of non-cohesive gold for all simple cavities between the front teeth, but must be content to make the statement that after having tried everything else, through an experience of thirty years, we consider non-cohesive gold superior to cohesive in all small cavities between the front teeth, and so use it. We prefer the preparations of non-cohesive gold that are supposed to have that property imparted to them by the deposition of some foreign substance upon the surface, notably the foil made by Chas. Abbey & Sons. This is especially indicated in the case of young subjects, and in all cases where the pulps manifest extreme irritability. We believe it to possess a lower power for conducting heat and electricity than the strictly cohesive golds, probably because the interposition of a film of foreign matter between its leaves breaks the continuity.

### *Discussion.*

Dr. T. P. HINMAN, Atlanta, said that in some of its features the paper was almost a revelation in its teachings, especially as to the use of gutta-percha in filling the front teeth of children. He always used cement for these teeth, but did not get as good results as Dr. Noel ascribed to gutta-percha. The plan of cutting away the lingual enamel to make permanent self-cleansing spaces, was also new to him, and though he had often heard of Abbey's soft gold, he had never used it.

The use of mallet force in dentistry he thought had reached its maximum, and from now on would probably decrease, while hand pressure would come more and more into use, and he thought the work would be better because of this.

Dr. H. E. BEACH, Clarksville, Tenn., uses tin for filling the teeth of young persons whose teeth decay before the dentin has reached its normal hardness, and has rarely, if ever, observed the

discoloration of the gums referred to by Dr. Noel. The preservation of the teeth is the prime object of all filling operations, and if tin will preserve these teeth that are yet in the formative stage, until nature has so completed its process of hardening the tooth-substance, aided as this will be by the presence of tin, to the time when they can be safely filled with gold, and if tin will do it better than any other filling material, it would be well to use it, even if the gums are slightly discolored in some few instances.

He called to mind children for whom he had operated a quarter of a century ago, one especially in whose six anterior teeth he had placed seven or eight tin fillings, because the teeth were too soft at her tender age to fill them with gold. These teeth were well preserved until the little girl became a grown lady, when they were removed because of their unsightly appearance and replaced with gold. There is one of these fillings on the lingual aspect that is still perfect after nearly thirty years' service. No filling material ever used by the dental profession has a better record than that of tin.

Gutta-percha has not the durability that tin has, but except for that gutta-percha is better than any other plastic filling for children's teeth when it is properly used. That gutta-percha will preserve teeth as well as any other plastic material, he can demonstrate. He filled his own daughter's teeth with it at a very early age, and she is now twenty-two years old, and they are still doing service, the teeth scarcely showing any signs of ever having been decayed.

Dr. J. Y. CRAWFORD, Nashville, wished to insist upon the necessary care of the teeth in regard to regularity. Dentists know that in almost every case where an incisor tooth in the lower jaw is out of place there is a corresponding displacement of the same tooth in the upper jaw, therefore it is evident that in all cases with misplaced teeth, the teeth should be put in position before they are filled. We should fix them in their proper places and get the surrounding structures in physiological condition before we fill cavities. Unless this is done, it will be impossible to prepare the cavity and insert the filling properly.

Dr. W. E. WALKER, Pass Christian, Miss., said he thought Dr. Noel was misunderstood as to grinding away the contact-point of the tooth, that Dr. Noel only advocated the removal of the linguo-approximal marginal ridge, with the effect of increasing or widening the lingual embrasure, thus decreasing the labio-lingual diameter of the middle and cervical thirds without reducing the thickness of the occlusal third, and especially not disturbing the natural points of contact. Dr. Walker said that as far as he could see, this does not differ from the Arthur system, except in that it is limited to the upper incisors, and in this location he himself had used it with marked satisfaction and invariably beneficial results. He said that while he certainly had never been taught this system, having the good fortune to encounter in practice a few cases that had been treated thus, and always finding them doing well, he began to practice the method himself from time to time, every year increasing his confidence in it. The only objection to this method



is the amount of time necessarily required to do the shaping and polishing properly, this requiring more time than would be necessary to fill the cavity with gold. The precaution should always be taken to first excavate the cavity so as to leave no doubts as to its limited depth, provided there is objection to this shape were a filling still to be inserted,—though there would be no valid objection to thus shaping the surface and then filling the cavity, as the liability to recurrent caries on a surface shaped as described is greatly reduced owing to the greater facility with which the surfaces can be kept polished. It makes the surface partake partly of the nature of the lingual surface.

Dr. J. P. CORLEY asked Dr. Walker if he ever cuts away this lingual embrasure without touching up the point of contact between the teeth.

Dr. WALKER: Yes, if the knuckle needs polishing you can do it, but it is not a part of the operation at all.

Dr. NOEL said he believed an essayist never realizes until his paper has been under discussion how imperfectly he has done the work of preparing it. In consequence of this feeling he would alter his paper in some respects before its being printed. He had been misunderstood about the amount of cutting he would recommend in these teeth. He wished every one to plainly understand that he would conserve the labial plate of enamel in every case as much as possible. His operation was only applied to the superior incisors. The lower incisors are not so liable to decay on their approximal surfaces as the upper ones, and as they are smaller, with contact-points close to cutting edges, are easier reached.

On motion the subject was passed and Dr. JAS. T. MEADORS, Columbia, Tenn., read a paper, of which the following is an abstract:

#### CONSIDERATION OF CONDITIONS OF THE INTERPROXIMAL SPACE.

When the teeth occupy their proper position in the dental arch, their approximal surfaces are supported one against the other at a point near the occlusal surface of the teeth known as the contact-point, causing by such an arrangement a triangular form between the teeth, the base of which is the border of the alveolar process and the apex at the contact-point. This space is normally filled with gum tissue, which has an arched form bucco-lingually, the crest of the arch being near the contact-point. Provided the point of contact is small, while masticating any fibrous foods the mass is severed at this point of contact, and as a result of the form of the gum tissue, as well as its elasticity, the food is carried from the region of the interproximal space.

When by decay the approximal tooth-surface is lost, especially when the decay has been so extensive as to have caused a breaking down of the approximo-occlusal border, the teeth seeking support move closer together, and thereby nearly obliterate the interdental triangle, causing the dental tissue to festoon abnormally on the buccal and lingual surfaces, and from the improper contact of the surfaces of the teeth fibrous material and foreign matter wedge

into this space, and crowd the gum tissue in such a way as to reverse the arched condition and by decomposition cause an inflammatory condition of the tissues adjacent thereto. In such cases, and under such conditions, you will find that of necessity your first act will be to separate the teeth by using cotton or gutta-percha, and restore the original conditions by properly inserting a filling so contoured as to produce a contact-point near to the approximo-occlusal angle.

The interdental triangle having been restored, the abnormal festoons soon disappear, and the gum tissue resumes its natural crest-like form. Should you make the contact-point broad and the surface of your filling flat, you will find the wedging of foods into this space a source of great discomfort to your patient, and a cause too frequently of failure of your filling so made. Upon careful examination of a set of teeth properly arranged in the arch, you will find the point of contact of each tooth very small, practically of not sufficient width for measurement. Close inspection will reveal the fact that the point of contact upon the upper bicusps and molars is nearer the buccal surfaces than the lingual, whereas in the lower arch the contact-point is nearer midway between the buccal and lingual surfaces. You will also find, as a rule, a very great difference in the surfaces of the teeth; for instance, the upper first molar is upon the mesial surface prominent at a point toward the bucco-occlusal angle, then falling away very rapidly toward the gingival and toward the lingual, whereas the distal surfaces of all molars are decidedly rounded and broad, falling away to the gingival.

The most decided difference in the location of the contact-point is observed in the case of the bicusps, the point with the upper bicusps occurring decidedly toward the buccal, whereas, because of their rounded form, the point with the lower bicusps occurs nearer midway between the buccal and lingual surfaces.

Your attention has been called to these anatomical conditions in order that in insertion of gold fillings, or in constructing gold crowns, you may as closely as possible imitate nature. I have always been partial to making the contact-point upon my fillings in the upper bicusps nearer midway between the buccal and lingual surfaces than occurs in nature, simply because I desire that while masticating, after the food is parted, both the buccal and the lingual borders of my filling might be equally polished by the passing of an equal amount of food over each margin.

Another condition which too often causes discomfort to your patient and failure of otherwise good work is the overhanging of filling-materials. Especially in large cavities upon the approximal surfaces of teeth in which the filling extends beneath the gingival margin, it is hard to know whether all of the overhanging material has been removed. With gold you find it difficult to polish down to a smooth surface flush with the enamel margins, and with amalgam you frequently find upon the return of your patient that some of the material while soft has worked up beyond your cavity margin, and has set and become a source of irritation to the tissues of the interproximal space.

The operator who files between teeth, and reverses the interdental triangle, no matter how dense may be his filling or how flush it might be against the enamel margins, has by having this triangle reversed done his patient a very serious injury.

In testing the proper relation of teeth one to another, as regards the interdental space, the silk floss is of greatest assistance. In passing a floss between the teeth you will find that it is brought to a stop at a point near to the occlusal border, and with some little pressure it snaps into the interdental triangle, and moves laterally with proper freedom. Upon removal, you will find that the floss passes over the surface of each tooth with ease until you again reach the contact-point, where you are required to use a little force, and it snaps as it is removed.

### *Discussion.*

Dr. GORDON WHITE, Nashville, was disappointed in the paper. The only thing that struck him as perhaps new was the use of gutta-percha to separate teeth, which is too slow for practice. Gutta-percha we all use to hold the teeth apart after they have been separated by cotton or other means, but if Dr. Meadors has a way of separating by the use of gutta-percha he ought more fully to explain it.

Dr. MEADORS said the manner of separating teeth by the use of gutta-percha is to fill an approximal cavity with the gutta-percha, leaving the filling somewhat full, then by the force of mastication the gutta-percha will be pressed down between the teeth, and thus separate them.

Dr. J. H. CROSSLAND, Montgomery, Ala., was surprised that Dr. White did not know of the method of separating teeth by the means of gutta-percha. The great dentist, Dr. W. G. A. Bonwill, taught the profession to do it years ago, and he supposed that it was familiar practice with all dentists. Dr. Meadors has done well to repeat and endeavor to impress on all of us that the interdental spaces are to be protected and guarded. When teeth are so shaped that food taken into the mouth is driven by mastication between the teeth and into the gingival tissue, the mouth is in a condition that ought to be avoided.

Dr. WHITE said he had known of gutta-percha used in separating, but it is a very passive agent, and we need something more active. Gutta-percha will hold the teeth apart, and will separate them a mere fraction of increase, but to get adequate separation we need something with considerable expansive power. Gutta-percha causes little pain because it does not expand, but rests the teeth.

Dr. W. V.-B. AMES, Chicago, spoke of a Chicago lady who, being in Philadelphia, visited the office of a very prominent dentist of that city, one who is known and respected all the world over. She happened to have a great many interproximal cavities. The dentist, to get the necessary separation, used pink base-plate gutta-percha. The lady was taken sick and went to a watering-place, remaining there so long that she did not return to Philadelphia, but went home to Chicago. By this time the separations between her



teeth had become so great by the action of the gutta-percha that her face was actually deformed by the protrusion of her front teeth. On seeing her he removed the gutta-percha, filled the teeth, and they returned to place; but he warned his hearers not to leave gutta-percha too long between teeth with the idea that it was not active.

Dr. MEADORS was gratified that his paper had brought out such full discussion, and he thanked the members for taking part in it.

On motion, the subject was passed, and the convention adjourned till the next morning.

### THIRD DAY—*Morning Session.*

The convention was called to order at 10 A.M., and Dr. C. L. Alexander, Charlotte, N. C., exhibited and described a system of cast fillings. The first case he showed was a molar badly broken down. His method is to cut out the decayed dentin thoroughly, then fill the undercuts with gutta-percha and make a matrix of gold foil as if for a porcelain inlay, fill this with gold solder and cement it into the tooth with gutta-percha.

Dr. H. H. JOHNSON, Macon, Ga., said various men in the profession claim to have originated this method of filling, and of their claims he would have nothing to say; but to Dr. Alexander we owe its presentation to the profession. He considers it a great advance over other filling methods. It is a scientific work of the very highest order, and it is the character of work that will elevate professional dentists above the dental parlor charlatan and mountebank. In these days of sharp competition we must be able to excel these people in their own field. Modern crown- and bridge-work has been food to the dental parlor charlatan as bouillon is to the germ, and they have fattened and increased on it; but this kind of advance is beyond their power. The defects in such work cannot be hidden by being driven below the gum, but will be evident if such defects exist.

The committee on orthodontia and oral surgery being called, Dr. H. H. JOHNSON read a paper, of which the following is an abstract:

#### FRACTURE OF THE JAW; A REPORT OF TWO CASES.

*Case I.* Patient a boy thirteen years of age; a gunshot wound. The bullet entering the end of the nose, passed above the incisor teeth and ranged toward the position of the canine, which was unerupted. It hit this tooth squarely, carrying it through the cavity of the antrum and lodging it in the posterior walls. A surgeon was called and made an incision in the cheek and removed the canine, but the bullet, falling into the deep cavity of the bone, was not located or removed, there being no X-ray apparatus at hand.

All that portion of the bone containing the bicuspid and molar was completely detached from the main body of the bone and was only supported by the soft tissues of the mouth and the muscles of the cheek. The sockets of the teeth were not much disturbed, as all the teeth were firmly rooted in the detached portion of the bone, except the first bicuspid, which was knocked loose.

The surgeon had removed all the small fragments of bone from the track of the bullet when Dr. Johnson was called upon to try to save the teeth and the portion of the bone which contained them. He found the patient still anesthetized and made a hurried examination. He decided to make a splint for the teeth, and took an impression in modeling compound and made a model. Dies and counter-dies were made, and a gold splint to fit over the teeth of the arch extending from the second molar at the point of fracture around to and including the incisors. The teeth being dried off, the appliance was cemented firmly into place. To prevent displacement, a vulcanite support a little thicker than the gold splint was cemented on to the bicuspid and molars on the other side to raise the bite.

The patient was very comfortable with the splint on, and it was allowed to remain in place for a few days over six weeks. When it was removed, all the broken parts were found firmly united, and the soft tissues presented a perfectly normal condition.

*Case II.* Fracture of the outer plate of the inferior maxillary bone, including the four incisors. This plate of bone, representing one-half of the sockets of the teeth, was split off, carrying the teeth attached to it; there was still attachment of soft tissues. No splint was used in this case. The parts were simply replaced and the piece of bone dovetailed so firmly into the part from which it had been broken that no splint was needed, and the parts healed perfectly, leaving no visible scar.

(To be continued.)

## ANNUAL CONVENTION OF THE SIXTH, SEVENTH, AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE STATE OF NEW YORK.

(Continued from vol. xliii, p. 1450.)

### FIRST DAY—*Afternoon Session.*

THE convention was called to order at 2 P.M., and Dr. S. B. PALMER, Syracuse, read the following paper:

#### A SCIENTIFIC MENTION OF A PRIMARY LAW THAT NECESSITATES EXTENSION FOR PRESERVATION.

*Mr. President and Members of Associated Dental Societies,*—It affords me great pleasure to meet with you upon this occasion, and not less to offer my own conclusions in connection with the findings of those who engaged in debate at a regular meeting of the Second District Dental Society of the State of New York, which was held on Monday evening, March 11, 1901, in Brooklyn.

For the information of those who did not read the report of that meeting, I will add that the following societies had been invited to attend, and a large number of their members were present: The First District Dental Society of the State of New York, the New

York Odontological Society, the New York Institute of Stomatology, and the Central Dental Association of Northern New Jersey. The paper of the evening was read by Dr. R. Ottolengui, of New York. The program announced the subject of debate as follows: "*Resolved*, That it is necessary to the future safety of carious teeth that the gingival enamel margins in approximal cavities should be extended so as to lie under the gingival gum septa." (Affirmative—C. N. Johnson, Chicago; G. V. Black, Chicago; E. K. Wedelstaedt, St. Paul; M. S. Rhein, New York. Negative—E. T. Darby, Philadelphia; B. Holly Smith, Baltimore; Wm. H. Trueman, Philadelphia; S. G. Perry, New York.) The reputation and skill of the gentlemen named are evidence that both phases of the subject were ably set forth, and the reader is at liberty to adopt the findings which in his judgment can best be administered in his practice, considering his skill and the demands of his patients.

It is not the purpose of the writer to review the reports of this meeting from either standpoint, both having been so ably discussed. In carefully reading the lengthy report it is shown that the gingival margin, which has been made the point of issue in the discussion, is considered prone to decay, "the vulnerable point," etc. Some account for the fact by neglect,—lodgment of food,—which in a measure is true. But this is not all. For more than twenty-five years the writer has considered this question from a chemical standpoint. I cannot better introduce my conclusions than by quoting from the remarks of Dr. Wm. H. Trueman, as given in his paper: "In this progressive age, notwithstanding the marvelous advance our profession has made in all its departments in the effort to keep step with the procession, we now and again find ourselves upon very familiar ground. It is so to-night. Early in August, 1878, I had the pleasure of reading a paper before the Pennsylvania State Dental Society, entitled 'Why do Fillings Fail?' More than a score of fruitful years have passed, and the question is still before us. This large and attentive audience is evidence of the keen interest it still commands. While we have, or think we have, a better understanding of the destructive agencies which we combat and of the beginning and progress of dental caries,—and undoubtedly we have advanced in technics and are better provided with tools and appliances,—we are not as yet masters of the situation, but are compelled now and again to exclaim, 'Why do fillings fail?' Twenty or more years ago we were discussing the electro-chemical theories of the 'New Departure,' and I have brought with me a number of exhibits that accompanied the paper to which I have referred that are still of interest, and some are indeed as appropriate to the present phase of the subject as though especially prepared for it. The gum-margin, or cervical border, is still the recognized weak point. The theory of 'microbic plaques' has displaced the mysterious electro-chemical theory, and is more in line with modern theories of tooth-destruction, but it is none the less mysterious. The new theory, equally with the old, fails to explain why the agencies involved are at times harmless and at other times so destructive; why they are so energetic in under-



mining some fillings, while others, equally exposed to injury, escape."

The above quotations are of value in several ways. It is evidence that Dr. Trueman was conversant with discussions upon this subject twenty or more years ago. He mentions the fact that the "theory of microbic plaques" has replaced the mysterious electro-chemical theory, and it, too, is none the less "mysterious." With the above well-stated introduction, Dr. Trueman entered upon the discussion on the line defined in the paper of the evening. I had arrived some five years before at the conclusions which will be given further on. In 1877 these principles, with others, were presented to the profession in a paper entitled "The Basal Principles of the New Departure." Dr. Trueman read his paper in 1878. Following this "mysterious" electro-chemical theory came the theory of "microbic plaques," which is counted none the less "mysterious." Twice I have made an effort to clear up the mystery, but without success. Not being discouraged, every opportunity has been carefully watched, and on reading the report of the Brooklyn meeting it came like a revelation to me that evolution of comprehension, by the discussion of Dr. Ottolengui's paper, which clearly intimates that there is still something lacking, had awakened a new interest, and later that this meeting would be the place to make that something known. I can join with Dr. Trueman in saying, "We find ourselves upon very familiar ground."

First, I wish to establish a principle which to my mind is scientific, consequently a fact. Let this be done aside from the subject under discussion. Chemical laws are involved in composition and decomposition of all matter. In that connection there are associated electric currents positive and negative, magnetic currents or magnets with their positive and negative poles, chemical affinity, which is choice of elements, resulting in formation of liquids and masses, acids and alkalies, with innumerable compounds and conditions, with oxygen at the head. Oxygen has affinity for most other elements; also it manifests its energy in disorganizing chemical compounds. Oxygen is the principal cause of the "mysterious" manifestations mentioned at the gingival margins.

In one of the early illustrations used in writing upon this subject I mentioned the well-known fact that a post set in the ground first decays at the surface of the ground. Also that the portion remaining in the ground will longest remain sound at the bottom. During the writing of this paper, while riding in the country, I had an opportunity to observe an illustration of the cause of effect in connection with a natural law, not only limited to decay of wood set in the ground, but as applicable to the subject under discussion. An old line of telegraph poles had been dug out, to be replaced by something more modern. The rains had removed the adherent soil from the butt of the poles, which demonstrated the effects of the principles referred to more definitely than I had before witnessed. The wood being cedar and the soil by the road rather dry and heavy, decay had progressed slowly and by distinct lines. The poles appeared to have been set in the soil about four feet. At a

line or girdle upon the wood corresponding with the surface of the ground, there was a depression from two to two and one-half inches deep upon an average. The decay extended toward the end which had been in the ground, from ten to eighteen or twenty inches. The depression gradually lessened in depth toward the bottom.

The same principle may be observed on the rod of zinc used in telephone batteries, and quite often is demonstrated as above described, commencing with the average water line and extending downward toward the bottom of the rod. A long-used vulcanizer demonstrates the same principle by the copper shell or boiler becoming thin at the *water* line, not at the bottom which is in contact with the flame. This effect is caused by decomposition of water, probably by chemical action in connection with elements in the flask; oxygen being set free unites with the copper as mentioned. Old wooden boats show the water line by decay, which is an illustration of this principle.

In Albany several years ago the same law was recorded in iron in a number of cases. In front of an old building there were stone steps guarded by wrought iron balusters. Small rods of wrought iron were set in stone and tamped in with lead. The rods were covered with ornamental casings of cast iron. The wrought iron seemed unchanged for a few inches at the surface of the lead; above it was considerably diminished in size. The cast casing had become honeycombed, and numerous pieces of the flanges resting upon the stone had cracked and fallen out,—the effect of electrolysis. The lead was negative to both the wrought and the cast iron.

One paper could not set forth the many conditions of matter which express the positive and negative principles associated with the chemical changes of matter between electrodes of this nature. Let us return to our lesson of the poles by the wayside. The erosion described was mainly due to oxygen, which was liberated by decomposition of water through the agency of sunlight, heat, and its affinity for elements found in the wood and in the soil. In this same figure, which was somewhat varied, we have an unmistakable likeness to the conditions found at the gingival border of the gums. The variations in the length of the eroded girdle upon the poles was due to the washing away of the soil after decay had set in. The length of decay would have been uniform but for the wasting of the soil. Below the decay the wood was immune to erosion. At the extreme end the ax- or saw-marks were as distinct as when made. The object lessons by the wayside were not new to me, but in years of study and observation the principle so much sought for to clear up the "mystery manifested at the gingival border" can be no better defined than by applying nature's laws as known in physics to the conditions found in the oral cavity.

Chemistry is the science which is at the foundation of the causes which give rise to the mysteries mentioned in connection with the chemical activity at the gum border. There is really but one science of chemistry. In early writings there were lessons in inorganic

chemistry and organic chemistry. Organic bodies were considered to be the outcome of vegetable growth, and supported and sustained by organized substance, as plants or animals. The gulf is now bridged by the fact that carbolic acid, indigo, etc., may be artificially made. Still the general source of organic compounds is from substances of animal or vegetable origin. Chemistry fails to produce tissue of animal or vegetable bodies. They are made up by natural affinity, and are governed by *vitality*. When vitality ceases to be the bond of union, the tissue or elements find affinities in simple chemical compounds. I will quote the following from Cassidy's "Dental Chemistry": "Spontaneous disorganization of substances rich in nitrogen is called putrefaction. They give off compounds of an unpleasant odor, consisting largely of ammonia and its derivatives, whereas bodies of a non-nitrogenous composition losing their identity thus are said to undergo fermentation. In the latter case the compounds resulting are mainly devoid of unpleasant odors. The tendency of fermentation is to produce acids; of putrefaction, to produce alkalies."

Time forbids mention of the variety of micro-organisms that are present under these conditions. It is sufficient, however, to coincide with the accepted teachings of modern investigation that each phase of decomposition generates micro-organisms after its kind, acid and alkali; or, in other words, positive and negative, or opposite polarity. With this understanding, it may be seen why the gingival border is a line of marked oxidation or decomposition, also why the line changes from its normal position, as seen in healthy mouths of young people,—rootward in age or by neglect. It is generally understood that ordinary dental caries is caused by neglect; that is, by lodgment of food or other matter, which is allowed to ferment. Microbes and acids follow, and caries are the effect. We are told that the so-called "self-cleansing spaces" are immune to decay. This teaches that if all surfaces of the teeth were cleansed thoroughly there would be no caries, which in the extreme is quite true, so far as I know. Dr. D. D. Smith, of Philadelphia, gives the most reliable and practical evidence of cleanliness for prevention of any practical teacher to my knowledge. In support of this practice I will give an object-lesson in this line which occurred in my own practice a number of years ago. A young girl was placed under my treatment soon after the eruption of the first permanent molars. During the years of shedding the deciduous teeth, the worst feature in the case was the incorrigible disposition of the patient. Her mother had no control over her; her dressmaker complained she could not keep her quiet long enough to do fitting. I saw that the filthy condition of her mouth would lead to decay, for which I would not like to be held accountable, and I gave the girl a pointed lesson as to care and consequences. About six months elapsed and the patient returned. To my surprise and delight, the condition of her mouth was ideal. I felt at last as though there was a reward for doing missionary labor, and I thanked her for giving heed and care to the instructions. To my surprise, she triumphantly said, "I han't brushed them." That



sounded natural, but it did not agree with the fact in plain view. There was little to be done, but the interview led her to ask, "Does chewing gum hurt teeth?" The revelation flashed upon my mind. I said, "Do you chew gum?" "Yes," was the answer. I told her to keep on, as by that means she was saving her teeth. Of course, there was not much calcareous deposit expected at the age of the patient. By the use of the gum in actual contact or its action as a syringe, every space had been reached, no material remaining long enough for putrefaction or fermentation, and microbes had no abiding-place. This was a lesson of former days in cleanliness unwittingly carried out by simple means with comparative results that I shall never forget.

Adding this to the general conclusions agreed to in discussing Dr. Ottolengui's paper, that caries at the gingival border is the effect of decomposition, fermentation, etc., we understand that prevention may be applied in two ways. First, by carefully removing deposits before the changes take place by chemical action; and, while this process is the correct method, it cannot be practically introduced. The second method was introduced in debate as follows: "*Resolved*, That it is necessary to the future safety of carious teeth that the gingival enamel margins in approximal cavities should be extended so as to lie under the gingival gum septa." It is not my purpose to discuss the merits or demerits of these methods. The affirmative adopts the principle that a surface of dentin which is so situated that ordinary care of the teeth will not remove foreign substances had better be cut away and covered with gold. This implies approximal cavities or surfaces. In theory, and in practice as well to a limited extent, this is prevention. It is esthetic practice, being mainly associated with gold as a filling-material, and demanding the highest skill in the operator who has a practical backing of patients quite above the average in appreciation or in possessions. Those who enjoy the above opportunities may consistently claim, in the language of a bicycle manufacturer, "up to date 1901" dental practice. This practice seems to be based upon extension, and indeed for preservation upon this basis the esthetic limit has been reached. This principle has been and is being applied when a gold shell crown is made to cover the entire surface of the vulnerable point of caries. It is true such crowns, properly fitted, render the dentin thus protected immune to caries. This extreme, however, will not become popular. It may be seen that genral practice will be carried on upon a plane even below the 1901 standard. With the understanding that dental caries occurs at the vulnerable point from decomposition of matter that is allowed to remain around and between the teeth,—cavities and fissures,—and also that if small cavities are filled and the surrounding surface of dentin is properly cleansed extension is not liable to occur, it seems that this is a practical view to take of the average demands for operations in this localitv. This phase of the subject has been so thoroughly discussed that it need not be further reviewed.

Thus far the writer has passed over the ground covered by the

report of the meeting, adding now and then new points, but more especially various figures to make plain a law in nature which to my mind is the long-sought "mystery" to which Dr. Trueman refers as something lacking throughout observation in practice for over twenty years. This mysterious something was back of Dr. Ottolengui's purpose and methods for solving this mystery. If this paper was brought to a close as it now stands, with all the citations of positive and negative principles as given, the expectancy would not be realized. All that has been given has been to point out the main law, which is universal,—upon which worlds are builded, and not less upon which the positive and negative principles rest, even to the chemical activity at the gingival margin of the gums.

A number of years ago, when, in an effort to introduce this law in a figure to illustrate the positive and negative relations of the atmosphere to the earth's surface, mention was made that the clouds were positive and the earth negative, etc., that the lightning illustrated the fact, a voice said, "Let us come down from the clouds and take up dentistry." For fear of again being called down from aerial heights, I will say that the lesson we are seeking to learn and the key that will unlock the mysteries of the gingival border are found where the positive atmosphere comes in contact with the negative earth. Generation of electric currents by dynamos is proof that the atmosphere is charged with electricity. The atmosphere is a poor conductor of electricity, as we are taught by the frequency of lightning striking prominent objects, tall buildings, and trees, as well as metallic conductors near the ground. It is important that this principle should be perfectly understood, that the basal principle of all the figures which have been introduced,—the post, the iron railing, the vulcanizer, the zinc in a galvanic cell, the poles of electric currents, the conductivity of trees,—all is as sure as gravitation. All are based upon the manifestation of this law as taught at the surface of the ground, also at the gingival margins of the gums. Illustration by the various phases of positive and negative manifestations of electricity has been made to show that this principle is revealed in many ways and by various means. The principle under discussion as exhibited in the oral cavity is one of the many.

Having taken up the points in connection with the soil and other relations, we will make application of the same law in its operation upon matter in the mouth to produce dental caries. It is admitted that the sun is a great reservoir of force, from which our planet receives through its rays light, heat, and electricity, which are life-sustaining properties for vegetable and animal life, from microbes to man. This force is utilized at the earth's surface, where the positive current of electricity from the atmosphere comes in contact or mingles with the soil.

Agriculturists understand very well how deep to plant or to cover seeds to have them germinate. They also know that seeds planted below a given depth do not sprout; nor do they die because of a covering of too much earth, but there remain dormant unless

by some means, deep plowing or the like, they are raised to germinating strata. Examination of fertile soils shows that the ground is alive with micro-organisms at the depth which furnish food for plants. This productive surface of vegetable support is constantly enriched from two natural sources,—the sun's rays for light, warmth, and chemical influences; the atmosphere, for moisture, oxygen, hydrogen, nitrogen, carbon, etc., in connection with a constant flow of electricity passing from the atmosphere to the earth. This process is going on wherever vegetation exists. Cut off this supply from either source, and life and growth cease. Thus we can understand that the surface of the ground is on a line of decomposition and organization under fixed laws. When we carry these principles to the oral cavity, we find them duplicated with similar effects,—namely, dental caries, upon the same line where decomposition of matter is going on. The teeth are not set in the ground. The body, however, is the earth, so to speak, and the teeth are set in the sockets in the jaws. One figure will illustrate the similarity. Plant a shrub in a flower-pot. The shrub is a tree; the jar and the soil are the world to that shrub. When a rod of wood is forced into the soil to give support to the growth, the decay of the wood obeys the same law of decomposition as that of the post mentioned. The wood decays at the surface, while the end in the soil below remains sound. The soil is negative to the growth above.

It is no new statement to say that the animal body is negative to the outer surface of the skin. For negative call it alkaline, and it will be seen that nature builds up the body upon an alkaline basis. The bones grow protected from the atmosphere. The teeth are enameled before eruption. If after eruption accidents occur which expose the dentin, it is equivalent to breaking the skin of the body which causes inflammatory action. In short the same principles are involved in the causation of effects as seen in decay at the gingival border of the gums that have been described in connection with the conditions of the ground. This is not a late discovery, but a conclusion from study and observation for more than a score of years. I will cite a case in practice, which, to my mind, shows a close connection between the operation of nature's laws upon matter at large and that limited to the original field under consideration.

Some fifteen or more years ago a boy became my patient. He was from a well-to-do family, and had received fair instruction as to care of the teeth. The deciduous teeth had nearly all given place to the permanent set, which appeared above the average soundness of teeth at his age. The fillings required were mostly in fissures and pits, which were filled with material as indicated. Gold was used where age and structure of tissue would warrant. At each recurrent sitting new cavities appeared, and the teeth seemed to be breaking down. The metallic fillings, gold and amalgam, did not seem to be the usual preventive even in coronal cavities. Gutta-percha was reliable, but failed from wear. This condition continued for six or more years, before I learned the cause of the difficulty. The patient could not have the mouth covered with the



rubber dam. Then I learned that the nasal passages had been closed from some illness; operations had failed to open the passage. It was a case of "mouth-breathing." The patient said his mouth and throat became dry and troublesome whenever he slept. With gutta-percha fillings in the anterior teeth and amalgam with cement linings in the posterior teeth, decay was fairly checked. Added thereto the teeth have reached their normal condition of density. This marked case led me to notice cases of less severity from the same cause.

It gives me great satisfaction that, in presenting this phase of the cause of caries, it relates to the microbe theory, which will not prejudice minds, as might be the case if this discussion brought in the electro-chemical theory. While the two are parts of a whole, this relates to fermentation with its consequences, lactic acid, etc., which is greatly increased by the breath forcing the elements upon matter without which it would not readily be oxidized. The electro-chemical phase relates to metallic fillings, which are conductors of thermal changes through which abnormal degrees of heat and cold are brought in contact with vital tissue that is still undergoing calcification. The effect upon undeveloped teeth is to suspend farther deposits. The surface in contact with the metal becomes devitalized. That is the case with all teeth when filled with gold upon sensitive dentin. Injury occurs only to the teeth which are so poorly calcified that the devitalized surface results in caries. Thus this phase of caries is not under discussion at this time. It belongs to chemistry of organized life.

Passing from the chemical phase of the subject, for the present, let us understand what has been added to dental progress by the discussion of Dr. Ottolengui's paper. First, it is claimed that the standard of operative dentistry has been elevated up to date, 1901. This may be true for select practice. The conditions necessary to maintain a practice demanding such skill, material, and fees that even the middle grade of patients could not receive benefit from the improvement are self-evident. The practice which has and still does harmonize preservation and remuneration should not be cast aside because the methods of operating bear the date of 1897 or even 1891.

In a brief summary of the statements already given relating to the gingival margins of the gums, I will give an outline of my conclusions and belief. First: All manifestations are the effects of natural laws. Man is the highest creation of which we have knowledge. Man is the incarnation of all known laws, movements and forces which have entered into lower creations. Thus man is a world in himself, and incarnated in him is the principle relating to this discussion,—polarity and its opposing forces, acid and alkali. This principle is manifested in the earth, which is negative or alkaline; the atmosphere, positive or acid in its connection with oxygen. The body, internally, is upon the alkaline scale. It is bounded by the skin, which is comparatively a porous cell or separation between acid and alkaline forces. The body is built up beneath this protection, as a tree under the same law is protected by its bark. It is

taught that the hair, nails, and teeth belong to the skin, as well as to the mucous membrane. The teeth are the only exposed bones. It is an interesting study to notice how nature provides for this exposure without allowing the acids to come in contact with the alkaline element while passing through the dividing media. The teeth are enameled before they are exposed to external chemical action. The enamel on the crown distinctly marks the line where nature seals up the perforation made by the passage of the crown, by union of the gums with the cementum at the gingivæ. Here we have one first lesson in the "mysteries" of this border. Let us draw our conclusions from a healthy mouth, and bear in mind that we desire facts supporting science. It is safe to say that in a mouth in health, if as properly cleansed as would be possible to do it, the teeth would be immune from caries. This condition is rarely presented. There comes neglect, with lodgment of food, etc. Fermentation, micro-organisms, lactic acid are causes, and caries the result. Cavities are found upon approximal surfaces only where teeth receive good care, while in cases of neglect caries will be found at the angles. Decomposition of the impacted matter sets in at the surface, working into the mass. The labial and lingual surfaces of the teeth being more self-cleansing, where no brush or other means of removing the deposit is used the lingual and labial surfaces decay also. In all the above conditions the cause of caries is fermentation, etc., as described by Dr. Miller and others. The oxidizing agent being acid, alkaline washes and powders are generally prescribed. If by neglect, improper use of tooth-picks, or by age the gums recede, a new condition is introduced. The normal line of the gingivæ is inclined rootward. There occurs a puncture of the cell, which naturally divides the acid from the alkaline or living tissue.

Dr. Trueman said, "The theory of microbic plaques has replaced the mysterious electro-chemical theory, and is more in line with modern theories of tooth-destruction, but it is none the less mysterious. The new theory, equally with the old, fails to explain why the agencies involved are at times harmless and at other times so destructive; why they are so energetic in undermining some fillings while others equally exposed and equally inviting to injury escape." To my mind, the above conditions seem no more "mysterious" than other facts in chemistry. The hindrance to scientific progress seems to be in overlooking the principle that each varying condition bears its own result. That some teeth in the same mouth are immune to caries while others are not is evidence that there is a cause for each effect. So long as the conditions are discussed *en masse* the "mystery" will remain unsolved. The text-books of nature which have given me the best insight into oral electricity are the various fluid electric batteries; their lessons are direct from nature, and are not given to support theories, but to establish facts. The teachings thus written are not new. For many years I have been as powerless as one in a trance, being able to understand and think without the means to impart the knowledge to others. This occasion and opportunity impresses me that now is "the fullness of time," when evolution in science will allow others to understand the

difference between oral electricity, by which is meant currents which are generated from *organized* elements, such as food acted upon or excited by saliva in the mouth, and gastric juice in the stomach and alimentary canal.

As there is no written authority for this doctrine it has been held up before the profession as a "vague theory," existing only in imagination. It seems to the writer that he can now make himself understood upon this one point of difference between currents generated as above stated from elements which are of *organic* origin, as food, and the currents produced in the laboratory by *chemical* action upon metals or minerals. It is no more "mysterious" to comprehend than it is to believe that our food has been evolved from minerals by the organic process.

It will be conceded that in the changes from minerals to vegetables *life* has been an agent. Life again takes the organic material and generates from it a current of vital energy, which as truly runs the organized motor in the body as the dynamo runs the motor for industrial purposes. Now, let us make the application to the action at the cervical border of the gums. Food as taken into the stomach consists of positive and negative elements, and by the process of digestion it is converted into energy; that does not relate to the teeth. We will first illustrate by a set of good teeth, with healthy gums, without fillings. During eating, food becomes packed between the teeth. The mass there retained of course partakes of the acid and alkali taken with the food. That deposit does not figure as related to positive and negative elements. The small portion soon becomes neutralized, and fermentation is the first change, with its attendant effects. We pass that point. Acid is the agent of injury, and it is manifested upon the teeth in accordance with the care bestowed; where no care is taken, every surface of the enamel upon which this deposit is allowed to remain becomes an incubator for microbes. Teeth that are superficially cleansed will be attacked at the angles, because the changes at that point occur most frequently. Impacted matter may be retained long after fermentation has ceased. Proper cleansing would render the teeth immune to caries.

I should mention another phase of incipient caries which patients complain of more especially when strawberries appear in their season, and again in September and October when grapes and other acid fruits are indulged in. The acid is direct from the fruit, and affects the teeth most frequently upon the labial and buccal surfaces, where the gums show but slight recession. This introduces the first puncture or break in nature's line at the gingival border, and the agent is an acid. Following this up, we may see why some teeth in the same mouth may be subject to recurrent caries; there must be recession of the gums, or injury caused by tooth-picks or metal fillings that cross the line and enter the alkaline or negative tissue. This line is also defined by cement fillings; some fail in the same mouth, others not. Failure begins on the portion of the filling which enters the alkaline strata, not on the acid exposure.

Had it not been for the exhaustive discussion of Dr. Ottolengui's



paper, this border could not have been as well understood. First let us consider the liability of caries from the cause already mentioned, before fillings have been inserted. Thus far there is nothing "mysterious" connected with the margins of healthy gums. Decay is caused by acids, directly or indirectly. The so-called mystery is revealed by the falling away of the gum tissue from the enamel, thereby exposing the dentin to disorganizing agents. This condition increases the space for the lodgment of food, etc. Here I wish to make a statement, which in time will be recognized as the combination to explain the mysteries of the gingival border of the gums. At the point on a line where the gum tissue touches the dentin there is neutrality,—that is, neither acid nor alkali. Do not imagine the thickness of this separation by measurement in figures. The same insulation separates our bodies from outside encroachments. The body is on an alkaline basis, and its surroundings, the sunlight and atmosphere, are of the acid elements. Much thinner than the skin is the insulation that separates these contending forces. Slight abrasion of the cuticle, sufficient to cause bleeding, sets up inflammatory action; the slight puncture necessary for inoculation or vaccination proves that poisons are admitted through a very thin insulator. From a chemical and scientific point of observation, with the facts which have been introduced for illustration of the positive and negative principle outside of dentistry, I believe that the same law governs the decomposition of matter in connection with the teeth, and that caries is influenced by such decomposition.

The correspondence of the law in the oral cavity and in the various conditions before cited shows that the exciting cause of caries is generally an acid acting upon the alkaline elements of the teeth. It is well known that the roots of decayed teeth rarely decay beneath the gums. The gum margin is the line of separation between the acid and alkaline strata. Therefore, when a gold crown passes through the neutral line into the alkaline field, caries cannot progress. Those who in the debate contended for a space beneath the gum border that is immune to caries are correct. The practicability of filling as given is not now under discussion. It is a rare thing to find caries below gold crowns which are under the gums. It is common to find teeth that have supported gold crowns until they loosened and came out, with the roots coated with a thin deposit of calculi, showing that the region was alkaline. One condition I have found that has not come to my notice in print is that where a gold crown has been poorly fitted to a tooth with the gold passing under the gums the cement may be dissolved away, but caries does not attack the root under the crown, as it would have done provided there was an exposure of the root. The cement may be dissolved, but the space in the crown is alkaline, the same as the fluids in the root. Let there be a leak in the crown, and the crown fluid would ferment readily.

Again, the line of alkalinity is maintained about even with the tissue of the gums. That is, the portion of impacted matter which is in touch with living tissue takes on the phase of animal or

nitrogenous decomposition, while that which is exposed to the breath and oral fluids ferments and becomes acid. Thus there is conflict between the two elements at the gingival border as truly as there is between the tissues of the body and the outside elements. This leaves a field for our bacteriologists, to classify the micro-organisms and the bacteria belonging to the acid and alkaline fields. I believe that immunity to caries under the gum border is the manifestation of a natural law, as noticed under other conditions, as truly as the law of gravitation.

### *Discussion.*

Dr. W. S. ROSE, Schenectady, before beginning his discussion, drew upon the blackboard the outlines of two teeth, a canine and a bicuspid; then drew four lines across the teeth, No. 1 just above the contact-point, No. 2 at the contact-point, No. 3 below, and No. 4 at the gum margin. He asked all who believed that decay on the approximal surfaces of these teeth would begin at the point indicated by line 1 to raise their hand. Not a hand went up. When those who believed it would begin at line No. 2, or the contact-point, were asked for, about half a dozen lifted their hands. When those who believed line No. 3, or between the contact and the gum border was the place decay was most likely to begin were called for nearly every hand in the room was raised, while not one was found who thought the gingival margin was the point where decay would be most likely to commence. He then remarked that the opinion of the large majority of those who had voted agreed with his own, that decay was almost certain to begin between the point of contact and the gum line, and it would never be found at the gum line unless by extension. Having satisfied himself that those present generally agreed with him as to the starting-place of decay in approximal cavities, he read the following discussion of the paper:

Since receiving the essay, I have spent the time at my disposal in wondering at the principles advocated, indorsement and objection alternating to form the current induced by the essayist's inductive reasoning. I have questioned if sufficient examples have been given to establish the rule. I have wondered if the ground, after all, had much to do with the disintegration of the post, since this same ground enveloped the unaffected bottom that surrounded the girdle of decay, and since in the old style of picket fence, where the pickets penetrated the stringers, they would decay at that point of contact as readily as would the posts in the ground. The iron deck of a freight ship will wear longer where the friction of travel occurs than in unused but exposed places. The combined influences of water and air seem to produce the deterioration, and air seems to be quite an essential factor, as the bottom of a wooden ship will last longer in the water than out of it. I have also wondered why a live post—*i.e.*, a tree—does not disorganize at the ground line. It is in a similar situation and subject to the same influences, and if electricity be one the disorganizing elements should be greater, as the fluid of the tree makes it a better conductor. You will first notice the manifestations of decay in the

branches of a tree, and you have all known trees to thus lose their entire tops and new growth begin and a new top form. There seems also a discrepancy in the comparison with the post that the tree supplies, as the former is dead, while the latter, like the tooth, is alive. If there is any analogy between the tree and the tooth, the vulnerable point is not at the cervix.

Then, too, I have wondered why the essayist did not give the disintegrating processes by chemical formulæ, showing the constituent activities and resultant compounds, as well as an enumeration of the micro-organisms at work. Then a similar analysis in the mouth would show whether he is really entitled to claim an analogy. Indeed, I have even wondered if this could really be established, the tree belonging to the vegetable and the tooth to the animal kingdom. It would seem to be more rational to search the animal kingdom for illustrations.

Nevertheless, I most heartily commend the essayist's line of investigation, and am persuaded it will lead to some more definite information than we now possess concerning oral conditions. I question, however, the truth of the statement he quotes from the New York dental meeting, "that the gum margin is still the recognized weak point." I am more inclined to accept the opinion of Dr. Ottolengui, verified by his observation for twenty-five years, that fillings fail at the gingival border from unskillful work or from failure to cut to sound territory.

Not long since I selected from an old box in my laboratory one hundred teeth containing approximal cavities. In sixty cases the decay began at or near the point of contact. In thirty the cavities were so large that I could not ascertain the points of their inception, while in the remaining ten the decay began about the gingival line; but in these were appearances to indicate that unusual causes had been at work, as a filling in an adjacent tooth that had lowered the contact-point to the gum, the extracting of occluding teeth until the cervix of the affected tooth formed a new contact-point, the extracting of an adjacent tooth, etc. So that I accept the teaching of Drs. Black and Johnson that caries in approximal cavities commences at or near the contact-point. Now, if this be true (and one can scarcely doubt it after examining one hundred cavities), or, in other words, if no approximal cavities exist at the cervix except those invading that region by extension from the contact-point, how can cavities form at the gingivæ if there is no affected contact-point from which to start,—that is, if the susceptibility of the contact-point be rendered immune by a good gold filling? I fail to see how, unless the introduction of the filling introduces new conditions, electrical or otherwise, promotive of decay. Therefore, I again agree with the essayist when he says, "The practice which has and still does harmonize preservation and remuneration should not be cast aside because the methods bear the date 1891," or, I might add, because they have been indorsed by the lapse of years.

Yet I am glad of the advent of the "extension for prevention" theory in its most radical form. Its discussion will make us all better men. Like all new methods, it is sure of disciples. When



it was discovered that Providence had somehow erroneously inverted the V-shaped spaces of the oral cavity, many and eminent were the advocates of the plan to rectify the Lord's mistake. "There is no heresy, however damnable, but some pious soul will espouse its cause and bless it with a text." So we conservatives are moving slowly, though among the champions of extension for prevention may be found our best friends and most esteemed practitioners. We are content to await the unbiased logic of time, and will be satisfied with the outcome. "If it be of God, we cannot overthrow it; if otherwise, it will come to naught."

Ten years, however, scarcely suffice to settle the question. We see, constructed in defiance of the new principle, so many fillings that have hobnobbed with microbes and toyed with time for decades that we are not quite prepared to subject our patients to the increased pain, to the added discomfort and greater menace from intensified thermal changes, and to the nervous strain and inflated fees incident to these heroic operations.

Nor do we as dentists wish to unnecessarily perform more exhausting operations, such as are employed in much larger contours with more inexact, and therefore inefficient, restorations, and as are found in large fillings, with margins of multiplied length carrying their proportionate hazard of defects, especially below the gum line, even though Dr. Wedelstaedt assures us that almost anything will do under the septum. We still think healthy enamel supported by sound dentin more resistant to the stress of mastication than are metal fillings, and believe that a bicuspid with large mesial and distal contours must have weakened cusps. We are rash enough to coincide with the laws of physics in supposing, as is especially evident in incisors, that the larger the filling the deeper and more stable must be the anchorage to prevent lateral and adhesive forces from dislodging the mass, and that therefore the opportunities for retention are reduced as the cavity is enlarged. And, finally, we even believe that in bicuspids or molars a small filling may occasionally be well placed, preserving the great strength of the marginal arch.

In view of the foregoing conclusions we can scarcely accept the Western doctrine in its entirety. When their teachers direct us to follow an affected fissure until we can secure a good smooth finish, we answer, We will. When they wish us to extend an approximal filling bucco-lingually till it includes the susceptible area of the contact-point, we accept the teaching. In view of Dr. Palmer's essay we will even extend a cavity near the gum line to a point beneath it. But when they want us to carry an approximal cavity through two or three millimeters of sound tooth-tissue to hide the margin under the gum they place us in about the same box as was the hero of an incident that recently came to my notice. A rustic from a locality where they do not grow celery nor eat mollusks stepped into a restaurant, where, not being able to interpret the terms on the bill of fare, he was compelled to accept the proffered offer of a regular dinner. Seeing some others eating celery, he ate all that was in the dish near him, even to the tops. He did

not recognize the restaurant article in the generous bowl of soup next brought him, but he knew it was a part of his diet, so raised the bowl to his lips and drank the contents. The waiter then brought in a boiled lobster. This our friend viewed suspiciously, and alternately looking at the lobster and the waiter thus defined his position: "I've ate your bouquet and I've drank your dish-water, but I be hanged if I'll eat that bug!"

When, in the reign of Edward VI, the English sent an army to Scotland to compel the Scotch to give their young queen Mary in marriage to Edward, you remember one of the Scotch nobles said he disliked not the match, but he hated the manner of wooing. That is the way some of our Eastern men view this recent doctrine. We do not object so much to the principles as we resent the way in which they are advocated. We do not like our best men stamped as men who fill holes, as forty years behind the times, as being unable to handle instruments, and as knowing nothing about scientific cavity preparation, as was done at the New York dental meeting. However, when men like Dr. Wedelstaedt aver their lightning ability to annihilate time and space, and incidentally their opponents, in preparing and filling huge cavities in a quarter of the time required for small ones, and in removing the excess of gold from the gingival margin in one stroke of an instrument, we cannot withhold our admiration, and have no criticism to offer but that of praise:

#### "EXTENSION FOR PREVENTION."

Extension for prevention is the hobby now we ride,—  
We found it in Chicago, Black's and Johnson's growing pride;  
But it quickly ambled North and South and to our Eastern shore  
Till it dispossessed the microbes, and our fillings fail no more.

We've the gnathodynamometer, that shows the biting stress  
Exactly to the pennyweight, eliminating guess;  
We have scales to weigh our mercury, and instruments to show  
No contraction, slight expansion, and how much amalgams flow.

Much is due our Western *confrères*; Wedelstaedt has pointed out  
That the author of our *Items* gropes in scientific doubt,  
That the snows of forty winters lie up-piled upon his skill,  
That to tools he is a stranger, and his methods fraught with ill;

That a live and modern dentist touched with Western skill and lore  
Cannot fail to make a filling good for eighty years or more;  
He extends the fickle borders till they're all in open sight,  
All except that 'neath the septum, which he's sure is watertight.

And with magic hoe and chisel he'll displace the ugly bone  
Quicker far and with less effort than it could be left alone!  
And he'll fill the larger opening, trim and polish to surprise  
In less time and for less money than if it were half the size.

Then our lady's first bicuspid is a tooth of beauty rare,  
With the sunrise on its mesial side and sunset in the rear,  
Clasped effulgent in occlusion, decked in double-dovetailed sheen,  
Glittering golden round the corners, with a strip of white between:

Strip of white,—esthetic blemish, just a hint of nature plain  
Left to work upon his conscience and suggest a "date" again;  
Harsh attrition, mundane duty, will in time efface this blot,  
Then he'll revel in his glory,—place a gold forget-me-not.

And the pale though sound incisors pities he with artist's eye,  
Mends their luster with his fillings, thwarting failure by and by,  
Thus excelling their Creator both in shade and sides immune,  
Blessings on our Western brother,—to humanity a boon!

So our colleagues have revised us, and have made us up to date:  
Where our fillings lasted forty years they now last forty-eight;  
We are expert in prognosis, for a decade clearly proves  
That the wedge and prism anchorage far surpasses wedge and grooves.

But the star whose zenith proudly once proclaimed the East's renown  
Hath departed in the glory of the radiant Western sun,  
Where with splendor grandly glorious symbols he in shafts of gold  
Golden work by golden dentists,—passport to the streets of gold!

Dr. R. H. HOFHEINZ suggested that the next paper, as it was on much the same subject as Dr. Palmer's, be read before further discussion of Dr. Palmer's paper. In accordance with this suggestion,

The following paper was then read by Dr. SYLVESTER MOYER, Galt, Ontario:

#### THE ENAMEL OF THE CENTRAL INCISORS.

In considering the enamel of the human tooth it is evident that it matters little whether we have before us the erring tooth that bit the forbidden fruit six thousand years ago, the broad, bulky, bronzed tooth of the Boer of South Africa, the pretty, perfect tooth of the children of the Philippines, or the disintegrated incisor of New York's "four hundred." It matters little from what century, from what clime, from what age, or from what person the incisor is taken when the scientist of the twentieth century throws upon it the search-light of modern investigation. Under all these varied conditions, the chemical composition of the tooth remains practically the same; the histological structure remains the same; it is developed similarly, assimilates food similarly,—it is the same tooth. Only environments differ. But the environments of the teeth of the civilized nations of to-day differ so widely from those of other nations and ages that amid all this perfection of beauty and of development there is disintegration and decay in almost every denture.

For nearly six thousand years the enamel was the last part of the human organism to yield to the ravages of time, and to lose the power of its natural function. Now the same tooth is the first organ to bite the dust.

If we were to compare the mouth of the civilized with that of the uncivilized we would find, so far as the eye could see, no appreciable difference. But when the saliva is tested it is found that that of uncivilized peoples and of animals in their natural state is in reaction decidedly alkaline, while our saliva and that of pet animals in confinement and fed on prepared food is either weak alkaline or of acid reaction.

And since it is a fact that alkaline saliva dissolves the mucus much more rapidly and thoroughly than our saliva, which is acid, the effect of the difference of environment becomes appreciable, and we are prepared to accept the opinion of Drs. Black and Wil-



liams when they say that "the difference in caries of the teeth is not due to any difference in the calcification of the teeth, but to different conditions of saliva." They further lead us to believe that, under certain conditions favorable to their existence, minute gelatinous-forming micro-organisms throw out their sticky films and form little plaques wherever they can, for a brief respite, find a "suitable habitat." Here they live and multiply, and in the course of their little lives excrete an acid that gradually but surely softens and disintegrates the enamel.

We may differ in our opinion as to the cause; we do not as to the results,—they are identical. On certain areas, we all find decay to a greater or less extent; on other areas we find none. Areas that can be, and are, kept clean by the use of the brush, by the excursions of food in mastication, by the movement of the lips, the cheeks, or the tongue, or are covered by healthy gum tissue, are immune from decay. It is on the areas of habitual uncleanness that we find it. On the incisor these areas are, as you all know, to be found in the lingual pit in the gingivo-labial area, and on the mesial and distal surfaces.

Before further considering the enamel with reference to its disintegration, let us look for a moment at the enamel of an incisor fresh and perfect from the hand of nature. Notice the arrangement of the prisms. Perfectly united, yet separate, each a whole, yet in minute parts, every pillar resting on a foundation of dentin, capable of withstanding, as they frequently are compelled to do, a stress of two thousand pounds or more to the square inch, and a range of temperature, even within the same moment, of from 120° to 150° F. The divine Builder has built for us a bridge, presenting the strongest form of structure ever placed before the eyes of architect. But when the little microbe is permitted to erect his structure upon it he says, "You're mine!"

If you examine with your chisel or otherwise the enamel rods of an incisor at the juncture of the middle and gingival thirds of the tooth, the rods on all surfaces, except in some cases on the lingual side, will be perpendicular to the surface along that line. If the lingual surface is deeply grooved or pitted, the rods will be inclined (as they are in all teeth) toward the groove or pit. As we go toward the gingival the rods will be found to incline more and more toward that margin, and as we approach the incisal margin there is gradually increased inclination of the rods until we reach the incisal edge, where the rods are perpendicular to the surface. On the mesial and distal surfaces, the rods do not begin to incline toward the incisal until the incisal third of the tooth is reached. On the distal, the inclination of the rods is more gradual than that on the mesial. Hence greater care is required in cavity preparation to avoid having the edges of the fillings too thin. In passing around the tooth the rods will be found perpendicular to the surface, except at the marginal ridges on the lingual surface. Here their direction is very uncertain, and consequently may form a very uncertain wall if not cut away; the only certainty being in cutting away the margin until sure of the direction of the rods.

With this knowledge of the histological structure of the enamel of the incisor, and with due consideration of the conditions which govern its liability to decay, we will now consider the treatment of the enamel in preparing for filling the cavities found in the surfaces already referred to.

The cavity in the lingual pit needs scarce a passing notice. As in all pit cavities the decay has burrowed beneath the enamel, which must be chiseled off until sound dentin is reached, and to such a point on the surface as will admit of the filling being perfectly finished. Especial care must here be given to the cavo-surface angle, for if it is not properly planed off the enamel prisms will be knocked loose in inserting the filling.

Smooth surface cavities call for greater knowledge, greater consideration, and more skillful manipulation.

Just at the edge of the free margin of the gum, a white line is noticed, in which one or two tender openings are found. The white line of disintegrated surface enamel extends toward the mesial and distal angles. What caused the disintegration? Very plainly an acid. What produces the acid? Microbes. Why in that particular spot? They found a habitat there, spread their film, and excreted their disintegrating acid over all of the surface that they were permitted to occupy. Had that affected surface all been gold there could have been no decay, hence if replaced with gold no decay can follow, for the margin of the cavity walls will be along an area immune to decay.

Preparation of this cavity: With chisel and small inverted-cone bur break away the enamel and extend the cavity along the gum margin to the end of the white line, and as much farther as the necessity of the case would indicate. The extent of this "extension for prevention" will depend upon the variability of the extent of the unclean area and the environments governing the liability to a return of caries in that area. In many cases this extension will reach the mesial and distal gingivo-labial angles.

The same considerations must determine the extension of the cavity toward the incisal,—in all cases going only so far as is necessary to place the cavity-margin where it will be kept sufficiently well cleaned or protected as in all reasonable probability to prevent a recurrence of caries.

In considering the gingival wall we do well to remember that decay never begins under the free margin of healthy gum-tissue on the labial surface of the incisors. A finish can therefore be made on that wall of the cavity against perfect enamel, and under conditions safe from the ravages of microbes. It now only remains for us to plane off loose, broken, or unsupported rods from the cavity walls and to slightly bevel the cavo-surface angle.

Our next case presents a proximal cavity a little rootwise from the contact point. The enamel shows a leaden appearance on both labial and lingual surfaces. After deciding where to place the margin of this cavity split away the enamel until sound dentin is reached around the entire circumference of the cavity.

In cases of extensive decay it is occasionally advisable for esthetic

effects to leave some unsupported enamel in the labial surface if it is of full strength and proper color.

We are now ready to consider "extension for prevention." In nineteen cases out of every twenty where there is decay to the extent described, and the gum is in its normal condition, part of the gingival arc of the cavity so formed will fall beneath the free margin of the gum, where it will be protected from the disintegrating destruction of microbic acid.

In following this margin of the cavity, both toward the lingual and the labial surface, we shall, as we emerge from underneath the gum, come upon an open area of "habitual uncleanness,"—a common and convenient habitat for microbes. Very careful examination will frequently reveal a suspicious-looking line of superficial injury on both the labial and lingual, extending from the cavity toward the margin of the gum. What, then, is my duty if I would here give my best services? I have to-day but one answer: Cut back the angles until protected by the gum; in other words, cut out that unclean area.

In preparing the incisal angle of this cavity especial care must be given to the direction of cleavage of the enamel. In distal cavities of the incisor the cutting should always include the normal contact point of the teeth. Cavities on the mesial surface cannot always be carried to that extent on account of the nearness of the contact-point to the incisal edge. If the cavity extend near the incisal angle, the cavity wall at that point must incline strongly toward the incisal, especially on the distal surface, in order to follow the length of the enamel rods. What legions of unrecorded failures as the result of unsupported enamel rods or too thin margins of filling at that point! And now, as in the two previous cases, we have a cavity margin "as reasonably immune from decay as the hand of man can make it."

What about small cavities? Age and environments must govern. To a born dentist, each particular case will voice its own requirement. A glance and you are convinced that in this case "extension for prevention" is indicated even to its extreme limit, anything short of that being speculative. In other cases,—cases where the teeth are long and well kept, where the teeth are in the mouth of middle-aged or older persons, or where the gums are receded,—I would extend only sufficiently far for proper access, and that when the tooth is filled the public may know that the filling is 1000 fine.

The last case that I have to bring before you is the preparation of the enamel of the incisor for a filling where the incisal angle is weak. Wherever there is doubt as to the strength of the incisal edge or the permanence of the filling which might support it, take no chances. Among my patients, teeth thus filled frequently show enamel that is chipped, cracked, or split off, or discolored, or they show gold that seems to stretch back and creep away from the enamel, providing a space sufficiently wide to admit countless battalions of microbes, shoulder to shoulder. Whose fault was it that the enamel cracked or split or became discolored, or that the filling loosened or stretched away from the tooth? Mine in every



case,—my judgment was at fault. The better preparation would have been to have formed a step on the incisal edge.

Operation: Cut back the enamel on the approximal surface as in ordinary approximal cavities, then split off the enamel at the incisal angle, frequently to the extent of reaching the labial groove, which is the most prolific source of disappointment. Now grind off the incisal edge sufficiently well across the tooth to make room for ample strength and protection. The depth of this grinding should vary inversely with the thickness of the cutting edge of the tooth, it being frequently necessary to grind back until the dentin is reached. With a small inverted-cone bur, now cut a groove across the flattened surface to the extent of the width of the grinding, and sufficiently deep to admit of strength for the gold. In cutting the groove the labial enamel must never be touched by the bur, neither must the enamel that supports it be altogether cut away. All cutting with the bur must be done at the expense of the lingual plate. As an additional support to the incisal angle I think it advisable not to cut the step so deep at that point, nor the lingual plate so far back, and to round the angle somewhat.

In cases where the cavities are very large, and there is danger to the pulp owing to the effect of thermal changes, due to the presence of so large a mass of gold, devitalize.

Did I forget the esthetic? No, but I permanently filled the tooth at that point. For the margins will always be kept clean; there are no unsupported enamel prisms; the form of the cavity is a perfect dovetail; pressure upon the incisal edge will tend rather to hold in the filling than to break it away; no enamel will crack, it cannot break away, the gold cannot pull away, it will stand any pressure that the tooth can be subjected to without injury; it will never fail.

The teeth of the twentieth century require ideal care and ideal treatment. Temporizing is agonizing. Only to the extent that we as dentists do our best do we do our duty, and one can do his best only when he feeds upon, digests, and assimilates, so far as his individuality will allow him to assimilate, the best thoughts of the best minds of the profession. The thoughts contained in this essay are such as I have assimilated mainly from the lectures and writings of Dr. Black and Dr. Johnson, and, having verified them by experience in my own practice, would most heartily recommend them to your careful consideration and adoption.

### *Discussion.*

Dr. R. H. HOFHEINZ, Rochester. Before us we have two splendid papers,—one devoted especially to enamel preparation of anterior teeth, and the other one ramifying into that broad field of nature and science to which the essayist, Dr. Palmer, has devoted the study of a lifetime.

It is a happy intellect which can see both macroscopically and microscopically. The enamel plates of anterior teeth are particularly thin, and recurrence of decay usually occurs at the gingivolingual angle and incisal angle of approximal fillings. The lingual enamel plate should always be cut away well. It is my experi-

ence that small approximal cavities filled from the labial side have failed oftener than those filled from the lingual; undoubtedly owing to the fact that the lingual angle received better attention through the proper beveling of the same, thus cutting off any short enamel rods and permitting the ends of the others to become well protected by the gold. This point has been well emphasized in Dr. Moyer's paper, and a thorough knowledge of the histological arrangements of enamel rods is necessary to properly prepare any cavity.

In speaking of labial cavities he says, "What causes the disintegration? What produces the acid? Microbes." Yet the labial surfaces are counted among the immune ones, being kept relatively clean by the constant moving of the lips. It is quite difficult for the microbic plaques to favor the oral cavity with their presence in such cases. May not the theory of Michaels help us somewhat in this particular instance? You have all read his brilliant *exposé* on the human saliva.\* His experiments have shown that an abundance of glycogen produced by the liver would give the saliva a strong alkaline reaction, but as soon as the glycogen comes in contact with the ptyalin, which is always present, it undergoes a chemical change and reduction,—first into glucose, and then into lactic acid. It is to be feared that the very decay upon so-called immune surfaces may be owing to the production of lactic acid which finds its way into the oral cavity, aside from that produced by the micro-organisms as the result of fermentation.

Of great operative interest is what the essayist says of approximal fillings extending nearly to the incisal angle, where there is a possibility of the enamel splitting or cracking some time after the filling has been placed. The so-called "step" which is to be made on the lingual surface, as Dr. Moyer and others recommend, is a great step toward the success of that individual filling, but in many instances the teeth are too thin at the incisal portion to permit of this operation, and where they are thick enough the enamel is rarely fractured if the pulp of the cavity and the articulation have received the proper attention. The main stress in cases of that kind he lays on the preparation of the gingival wall of the cavity. He prepares it exactly the same as if it were to receive a contour filling with the proper dovetail undercuts, gingivo-labially and gingivo-lingually, connecting them with a groove, thus forming a retention for the filling which cannot be dislodged, but only broken. If a future breakage should occur at the incisal edge, the filling can easily be cut off, the enamel properly prepared, and the corner restored without removing the entire gold filling.

Much vocabulary and printer's ink have been spent on the subject of Dr. Black's recommendation of extension for prevention. Have they revealed any new truths, or have they detracted anything from Dr. Black's scientific and physical dicta? I for one at least have failed to find any. First of all we must recognize the action of micro-organisms upon the carbohydrates, and the fatal produc-

---

\* See DENTAL COSMOS, vol. xlii, 1900, p. 1293.

tion of lactic acid wherever the microbic plaques exist as the primary causes of first decay. Second, we must recognize the truth of Dr. Black's investigation, that decay of the teeth does not depend upon the difference of their structure; that the decay is not influenced by the tooth-structure internally, but by the conditions externally. With some exceptions, tooth decay invariably begins upon the surfaces that cannot be kept thoroughly clean. Fissures, pits, and contact-points of approximal cavities are by far the most vulnerable points. The decay upon the vulnerable surfaces is, if not owing to lack of ordinary care, possibly the result of an abnormal follicular acidity and the action of lactic acid, which, as I have above remarked, may be found in the oral cavity aside from that produced by the micro-organisms. The vulnerable point of all approximal anterior fillings is the gingivo-lingual angle. The vulnerable point of approximal fillings of posterior teeth is the lingual margin, with special preference for the gingivo-lingual and labial angles. The greatest contention on this subject seems to have centered upon the question whether the area under the gum margin is immune, and whether all approximal cavities should be extended under the free margin of the gum. I have as yet never seen decay under a healthy and normally attached gum, and there is no doubt in my mind that there is no better protector than healthy gum tissue. Does this signify that we are to increase every small cavity to extend it under the gum margin? Why not at once fill every approximal surface in that manner to prevent future decay if that were the meaning for extension for prevention?

If I understood Dr. Black correctly, he advises to cut well toward the areas of immunity. Judgment, gentlemen, Dr. Black advises us to use. We should under all circumstances square out our linguo-gingival, buccal, and labio-gingival angles, and where the cavity is large and near the gum line we should carry it beyond the same to bring it beyond, as Dr. Palmer calls it, the line of alkalinity. Judgment of a broad nature is required to study our individual cases,—to know the relative susceptibility of decay, the age of the patient, and, above all, the prophylaxis the patient will bestow upon the teeth after operations are performed. The smallest filling may become of great permanence where proper prophylaxis is afterward observed, and the big fillings where the margins have been freely extended into so-called immune territory will fail if filth follows their introduction. A filthy mouth has no immune territory. It is necessary to judge all conditions which enter into recurrence of decay to arrive at the mature judgment of how much extension for prevention each individual case demands.

Dr. FRED M. ROOD, Rochester, asked Dr. Palmer where the line of immunity was.

Dr. PALMER said, At the line where the gum septum touched the gum. It is the law of decomposition that the destructive process always begins at the junction of the acid and alkaline action. If a crown is placed over a tooth and it extends over this point, and in the course of time the cement is dissolved away, the line moves up, and decay will not occur at this point unless there is a break in the crown above.



Dr. J. B. WILLMOTT, of Toronto, Canada, spoke of the fact that most of those present were young men, and said that they had had superior advantages in an educational way over those who had entered the profession years ago; and he did not doubt that they would, by reason of these advantages, improve the practice of dentistry and develop possibilities which did not exist for the older men.

The subject under discussion, as he understood it, was the primary condition which favors decay. He believed that Dr. Johnson coined the phrase "extension for prevention," though he was not the first to follow the method in dental practice, as it had been common in the profession for years. He did not accept Dr. Black's saying that in similar environments all teeth are similarly liable to decay, and he did not teach his pupils that all teeth are alike in structure. The tooth is the dentin; the enamel is the defense that protects the dentin from injury, and if the enamel is continuous the tooth, in spite of environment, will be immune from decay. If there should be an artificial break in the continuity of the enamel, then decay will set up at that point; or if there is want of continuity because of imperfect deposition of enamel, the same will occur. Now, where shall we expect to find a break in the continuity of the enamel? At the time of the development of the enamel it is, as it were, poured over the dentin from the cusps downward, and if the coat from one cusp links that from the others and coalesces perfectly the defense is complete; but if there is any break in its continuity the defense is weakened, and we have spots that are liable to attack. These spots are at the bottom of the sulci in molars, and on the middle line on all the approximal surfaces of the teeth, so the immunity of teeth from caries depends frequently on these factors in development and not altogether on environment.

He thought such faults of development as he had described were more frequent to-day than they were when people ate food of coarser material and not so generally cooked as to give no work to the teeth in its mastication.

Dr. PALMER, in closing the discussion, said that about thirty years ago respectable dental practice in filling teeth was conducted on a gold basis. At that time, somewhat to my discomfort, nature in practical lessons convinced me that there was an error in dental science that authorized established practice upon that foundation. Recognizing this, I prepared a paper, in the discussion of which one sentence seemed to voice the sentiment of the meeting in these words: "Such teachings would debase practice and degrade the profession." Investigation and knowledge since gained have brought the correction, and now in the light of scientific progress we may overlook all incidents of this period, and one and all rejoice that personalities have not broken friendships and that no bitterness has been treasured up.

Later on the brilliant discovery of microbes convinced leading minds that the etiology of dental caries had at last been revealed,

and all previous theories were passed by save that known as the "electro-chemical theory," which certainly has increased in vitality and has entered upon the twentieth century as an element in dental progress and a factor in dental science. Be this statement correct or not, I feel that the work commenced nearly a third of a century ago may safely be entrusted to younger members of the profession, who have better facilities for that line of study. There are evidences that this union meeting will go down in dental history as the occasion when inorganic chemistry and chemistry of organized life were admitted upon the platform of dental chemistry in its relation to the mouth and the teeth. It would undeniably be a vast stride in the science of our profession.

My individual part in the animated discussion of this interesting subject, my associates will bear witness, has been dispassionate and temperate. I have, with others, sought the truth of science, and rejoice at the progress made. We now as a profession occupy, substantially, common and accepted ground; and may we, with the light we have and with that we may gain, stand unitedly for the noble object of progress in our beloved profession!

Dr. MOYER said that he did not feel that he could add anything of real value to the discussion. He thought that there was more of beauty, of harmony, and of reply in the poetry of Dr. Rose than there would be in anything that he could say. He spoke of a gentleman sixty-seven years of age, nearly all of whose teeth were perfect, but who had a bridge of two teeth to fill out the arch. Upon examination it was found that under the bands which supported this bridge the enamel was entirely decayed. Was this on account of lack of continuity of the enamel? No. He was sure it was owing to the action of acid.

(To be continued.)

---

### BIRMINGHAM (ENG.) DENTAL STUDENTS' SOCIETY.

THE tenth annual dinner of the Birmingham Dental Students' Society was held at the Grand Hotel, Birmingham, on Friday, November 29, the president, Mr. H. Percy Joscelyne, presiding. About thirty-five members and friends were present, including several of the leading specialists of the city. After the toast of "The King" had been duly honored, that of "The Society" was proposed by Mr. W. F. Haslam, who in a felicitous and humorous speech gave the society a good idea, viz, that of bringing mistakes as well as successes to the meetings,—for as much, if not more, is learned from them. He coupled with this toast the names of the honorary secretaries, Mr. F. Broderick and Mr. R. H. Astbury.

In acknowledging the toast, Mr. Broderick spoke of the importance of the society, which stands second to none in the university.

"The Birmingham University and Dental School" was proposed

by Mr. A. Lucas, who attributed to dental students a degree of earnestness which was hard to beat.

In reply, Mr. Humphreys dwelt upon the birth of the university and the fine dental museum, and acknowledged with pleasure some handsome donations from Messrs. Donagan and Bowater.

Mr. J. D. Whittles, in reply, related some humorous incidents occurring in the last examination of the Royal College of Surgeons.

"The President," proposed by Dr. McCardie, was drunk with enthusiasm and suitably acknowledged by Mr. Joscelyne.

"The Visitors," proposed by Mr. Malcolm Knott, was responded to by Dr. Smallwood Savage and Councillor Bowater in brief and humorous speeches.

The toasts were interspersed with songs, violin solos, and recitations by various members of the society and friends, and a most pleasant evening was concluded with the singing of "Auld lang syne" and the national anthem.

J. W. BRODERICK, *Hon. Sec'y.*

---

#### READING (PA.) DENTAL SOCIETY.

THE Reading Dental Society, at its meeting of January 2, 1902, elected the following officers: E. W. Bohn, president; Geo. S. Schlegel, vice-president; Elwood Tate, treasurer; C. R. Scholl, secretary. Executive committee—S. E. Tate, W. D. DeLong, H. L. Cleaver.

The annual banquet will take place February 6, 1902, when Prof. T. C. Stellwagen will be the essayist and guest of honor.

C. R. SCHOLL, *Sec'y.*

---

#### ODONTOGRAPHIC SOCIETY, CHICAGO.

At the annual meeting of the "Odontographic Society," held Monday, December 16, 1901, the following officers were elected for the ensuing year: C. N. Johnson, president; W. T. Reeves, vice-president; Frank H. Zinn, secretary; Geo. N. West, treasurer. Board of directors—Geo. B. Perry, F. E. Roach, L. O. Green. Board of censors—F. B. Noyes, W. Girling, D. A. Hare. Program committee—C. E. Bentley, L. S. Tenney, H. J. Goslee.

The fifteenth anniversary of the society will occur in December, 1902. It is the intention of the society to celebrate the event by giving a rousing "Clinic" extending over two days, and a meeting that will be memorable in its history. Prominent members from all parts of the country are to be invited to be present. The program committee have already commenced plans for one of the most notable meetings that has been held in this country.

FRANK H. ZINN, *Sec'y,*  
100 State St., Chicago.



## DENTAL SOCIETY ANNOUNCEMENTS.

## IOWA STATE DENTAL SOCIETY.

THE fortieth annual meeting of the Iowa State Dental Society will be held at Des Moines, May 6, 7, 8, and 9, 1902.

The last annual meeting was in every way eminently successful, and the expectation is that this one will be even more interesting. The officers confidently look forward to an increase of attendance, as they are not sparing pains in the preparation of the program.

The present officers of the society are—Wm. S. Hosford, president; Frank Fourt, vice-president; I. C. Brownlie, secretary; W. R. Clack, treasurer.

## NEW JERSEY STATE DENTAL SOCIETY.

THE committee on exhibits desires to announce that at the thirty-second annual meeting of the New Jersey State Dental Society to be held, as usual, in the Auditorium, Asbury Park, July 16, 17, and 18, 1902, the large room which is especially adapted for exhibition purposes will be devoted exclusively to the exhibits. Every advantage is here offered for a great display, with all the conveniences necessary for such an exhibition.

This will undoubtedly be a "big year," and especially so from the exhibit standpoint. At last year's meeting over five hundred dentists registered at the entrance to the exhibit hall. The names of the exhibitors selecting space prior to the program going to press will be mentioned therein, together with the nature of their display.

It is earnestly requested that those desiring space communicate with the chairman at an early date.

FRANK L. HINDLE, *Ch'm'n Com. on Exhibits,*  
New Brunswick, N. J.

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

THE fifth annual meeting of the Southern Branch of the National Dental Association will be held at Atlanta, February 18, 1902. The association will be in session four days. Atlanta is now the best located and equipped city in the South for holding such a meeting; this fact assures a large attendance.

The Southeastern Passenger Association will give a rate of one and one-third fare for the round trip on the certificate plan. They will also give an extension of ten days after the close of the meeting so as to enable those attending the association to visit the Charleston Exposition. A cheap round-trip ticket from Atlanta to Charleston will be on sale. An effort will be made to have a special train for the dentists. Delegates living beyond the territory of the Southeastern Passenger Association can purchase a winter tourist ticket to Charleston by way of Atlanta, as these tickets have a stop-off privilege of fifteen days at Atlanta.

H. H. JOHNSON, *Pres. S. B. N. D. A.,*  
Macon, Ga.

C. L. ALEXANDER, *Cor. Sec'y S. B. N. D. A.,*  
Charlotte, N. C.

## VERMONT STATE DENTAL SOCIETY.

THE twenty-sixth annual meeting of the Vermont State Dental Society will be held at Hotel Berwick, Rutland, March 19, 20, and 21, 1902.

THOMAS MOUND, *Sec'y*,  
Rutland, Vt.

---

## ALUMNI ASSOCIATION OF NORTHWESTERN UNIVERSITY.

THE Alumni Association of Northwestern University Dental School will hold their annual clinic Thursday, February 22, 1902, at the college building, corner Madison and Franklin streets, Chicago.

All members of the profession are invited to attend.

A. V. HARGETT, *President*,  
G. B. MACFARLANE, *Sec'y*,  
70 State street, Chicago

---

## EDITORIAL.

## THE NAVY DENTAL BILL.

WE print below Senate bill 2519, which on January 8th was introduced by Mr. Pettus, of Alabama, given two readings, and referred to the Committee on Naval Affairs. As will be seen, the intent of the measure is to create a dental service in connection with the navy similar to that which has been recently provided in connection with the army, but the naval bill contemplates a service upon a more liberal basis than its army predecessor. The essential difference is that it is proposed to establish a naval dental surgeons' corps consisting of three grades with rank, pay, and allowances and with respect to promotion within the dental corps corresponding to the analogous grades of the medical corps of the navy. This provision will undoubtedly meet with hearty approval from all members of the dental profession, and should insure their active support in aiding the passage of the bill. When the army bill was passed with its provision for the employment of dental surgeons upon the contract basis, it was accepted under more or less protest as the best arrangement which existing circumstances permitted, but all felt that the character of the service to be rendered and the standard of professional attainment called for was worthy of a higher basis of recognition by the U. S. government than that implied in the grade of contract surgeon. If the naval bill becomes law in its present form a precedent will have been established for future correction of the army regulation with respect to contract dental surgeons, which should be done as soon

as possible. The stimulus which the possibility of promotion to a higher grade will infuse into the corps cannot fail to operate in the most salutary way by securing better service and attracting the best grade of practitioners to enlist.

The present position of the bill is such as to call for active work upon the part of dentists generally in the furtherance of its passage by Congress. It was the co-operative effort expended upon the army bill which carried it through the devious channels of legislative enactment, and a similar united effort will be required in the present case.

We have much ground for national pride in the fact that America is the only nation which has made anything like adequate provision for the dental care of its soldiers. Other countries, notably England, have felt the importance of a similar provision to maintain the integrity of health and capacity for efficient service in their defenders. The precedent which America has established in this regard has been the cause of much favorable comment and will doubtless aid materially in the general adoption of means to the same end among other nations. Our work will not be complete until an efficient corps of dental surgeons is attached to the naval service, and for that the Pettus bill adequately provides. Let the whole profession bring to bear its united influence to secure the prompt enactment of Senate bill 2519 into law:

#### A BILL TO ADD DENTAL SURGEONS TO THE MEDICAL CORPS OF THE NAVY.

*Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,*

That to the Medical Corps of the Navy there shall be attached a corps of dental surgeons to serve the officers, enlisted men, and boys in the naval military service and training schools, which corps shall not exceed in number the proportion of one to one thousand authorized by law for said service and schools.

The said dental corps shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon, and with respect to rank, pay, and allowances and to promotion within said dental corps the grades named shall correspond to the grades of the Medical Corps designated assistant surgeon, passed assistant surgeon, and surgeon, respectively.

SEC. 2. That original appointments shall be made to the grade of assistant dental surgeon, and the appointees must be citizens of the United States, between twenty-three and thirty-three years of age, graduates of standard dental colleges, with not less than two years' subsequent experience in practice, of good moral character, of unquestionable professional repute, and shall be required to pass a satisfactory physical and professional examination: *Provided*, That there shall first be selected a member of the dental profession who is a graduate of a standard dental college and whose aptitude and experience evidence eminent fitness for conducting the professional examinations herein provided for, and for otherwise assisting in organizing, equipping, and supervising the operations of the corps, who shall be first appointed to the grade of dental surgeon.



## PLACE THEM ON THE FREE LIST.

THE editor of the *Dental Review*, in the December, 1901, issue of that journal, makes a praiseworthy suggestion which we reiterate and indorse in the hope that it will meet with general approval.

The suggestion is that local societies should afford opportunity to our newly appointed army dental surgeons to avail themselves of the benefits to be derived from attendance upon and participation in their proceedings without payment of dues,—in other words, to place members of the dental surgeons' corps upon the complimentary list.

This is a courtesy which it would seem needs only to be stated in order to be practically appreciated. As dental societies are presumably organized for the advancement of the interests of dentistry, and as they have on the whole taken much interest in the creation of the army dental service, it is but fitting that, as a continued evidence of that interest, members of the corps should be made welcome at all meetings of local societies, especially by those situated near their posts of duty.

A by-law giving to these worthy representatives of our profession membership privileges without fee would be an act of courtesy creditable to the local organizations and highly appreciated by the recipients.

---

## THE CHEMISTRY OF TOOTH-BLEACHING.

As a matter of ordinary policy we refrain from criticizing the views of authors whose articles have been accepted for publication in the pages of the DENTAL COSMOS, but exceptional circumstances occasionally make it necessary to deviate from this rule, especially when an article, otherwise of value, contains teachings which we think may be misleading. The valuable contribution to the important subject of tooth-discoloration by Dr. Hoff which is published as the leading article in the current number, contains certain features which we believe to be erroneous, and it is with respect to these that we invite attention. Before doing so, however, let us say that we regard the results of his experimental research in this field as being extremely valuable, and with respect to these we have no criticism whatever to make, but, on the contrary, only commendation to offer. It is with his theoretical conclusions that we are here concerned.

The author says: "In ordinary bleaching of teeth, chemical reagents are employed on two principles; one is the *removal of the pigmented structure by oxidation* [*italics ours throughout*], the other decomposing it chemically and structurally by the process of

reduction." This statement is both erroneous and confusing. First, in neither case does the bleaching agent, strictly speaking, remove the pigmented structure. The utmost that we can claim is that the color molecule is altered in composition by the bleaching agent so that its color factor is lost, *i.e.*, the compound becomes colorless, nevertheless the by-products of the reaction still remain within the dentinal structure; and further, whether the bleaching process be one of oxidation or of reduction, the color molecule is decomposed "chemically and structurally," so that the essayist's explanation of the process of reduction would apply equally to the process of oxidation in the bleaching of teeth by chemical reagents.

That the author fails to appreciate the fundamental difference between the action of oxidizing and reducing agents is still further shown in his statement that "the reducing agents are such as have the property of breaking up pigment compounds by chemical combinations or interchange of elements having stronger mutual affinities than those which prevail in the pigment compound or the bleaching agent itself," but here, again, his definition is equally applicable to the mode of action of oxidizing agents. So far as we are aware, there is no difference of opinion among chemists as to the meaning of the terms oxidizing and reducing agents, the former being strictly applied to such agents as have the power of giving up oxygen in a nascent state, which oxygen enters into combination with the substance with which it comes in contact, thus oxidizing it, whereas reducing agents are those which have the opposite property, namely, of seizing upon oxygen when in combination with other atoms and removing it from such combinations, thereby reducing them to simpler molecular form, and it is upon this principle that the classification of bleaching agents set forth in the "American Text-Book of Operative Dentistry" was made. All of the bleaching agents thus far suggested, and which have been used with any degree of clinical success, act in either one of the ways mentioned, but of the class of reducing agents there is only a single representative, viz, sulfurous anhydrid, and we have yet to learn of any data or theoretical reasoning in chemistry which would tend to show that sulfurous anhydrid is an oxidizing agent.

Dr. Hoff takes exception to the idea that the action of aluminum chlorid in connection with hydrogen dioxid is simply a physical action, claiming, because of an increased acidity which he has observed to take place during the bleaching process, and that said acidity would indicate some chemical reaction between the two substances named. We admit the soundness of that reasoning, though we should like to know by what means the increased acidity was

determined, which is not stated; but, even admitting **that point** on theoretical grounds, we are wholly unable to comprehend **his** deduction therefrom, viz, that the action of these combined substances is therefore a reducing one; for, as a matter of fact, whatever action does take place, an excess of nascent oxygen is eliminated during the process, and therefore the combined substances certainly act as oxidizers.

We are left in a quagmire of uncertainty after reading the following: "Effective bleaching of this class of discolored teeth cannot be done as effectively by chemical reagents which act *by decomposing the stain on the substitution theory* as it can by the oxidizing reagents, or those which act at least through molecular oxygen, probably in the form of ozone, which effectively destroys the molecular integrity of the pigment or *absorbs it*."

We know of no bleaching agent which can be said to act upon the substitution theory, if by the substitution theory is meant that form of chemical reaction in which a mutual interchange of atoms occurs between molecules with the formation of two new compounds, as for example in the reaction which takes place between sodium chlorid and silver nitrate; nor can we understand what is meant by the suggestion that ozone or oxygen in any of its forms may "absorb" the pigment; but, more than all, we are not only uncertain, but positively alarmed when the author refers to "the theory of atomic disintegration." What will ever become of us when atoms disintegrate? How can an atom disintegrate? If they ever do, the whole structure of modern chemistry will disintegrate with them.

---

### CHINESE MODE OF EXTRACTING TEETH.

A PARAGRAPH makes its periodical appearance in the newspaper press, describing the wonderful dexterity of native Chinese dentists in extracting teeth by means of their fingers. In some instances the account circumstantially relates the method by which this dexterity is acquired, which in effect is to train the candidate for extracting honors by causing him to pull out ivory pegs which have been driven with more or less force into holes in a board or block of wood. By this process, it is said, a degree of strength and manipulative skill is acquired, so that finally the operator becomes capable of removing firmly rooted teeth by means of his fingers alone.

As we have had some doubt concerning the accuracy of these newspaper accounts, we have addressed to certain of our correspondents letters of inquiry as to the truth or otherwise of the statements



referred to, and we append a statement by Dr. Carrington, of Bangkok, India, which will throw much light on the subject.

Dr. Carrington has given much study to the modes of practice of native Chinese dentists, and his communication on the subject is trustworthy:

Since my arrival in the East I have endeavored to study the various methods of the Asiatic dentist. During my observations I have yet to find a Chinese dentist who extracts firmly rooted teeth by means of his fingers.

Having heard of that famous method (through home papers) I made inquiries, and I have no answers that would indicate such a method being practiced here or in China.

Further, the Chinese dentist is fast giving up his old methods. It was a difficult task to obtain the two pairs of forceps which I sent you. Every Chinese dentist now has a German make of modern forceps, instead of the ancient clumsy ones. Moreover, he does not confine himself to two pairs, but has five or six to select from.

In explanation of the fact that some believe the Chinese extract teeth with their fingers, I would add that the Chinese are betel-nut chewers,—as are, in fact, most Asiatics. The disastrous effects of this habit are so great that the teeth become quite loose. Sometimes the Chinese dentist will extract one of these loose teeth with his fingers, thus making a display to the public usually present on such occasions. By the time the news of this wonderful extraction has reached America, the tooth has become solid instead of being exposed four-fifths of its entire length, the alveolar ridge being mostly absorbed by the action of betel-nut and lime.

---

## OBITUARY.

---

### DR. CALLENDER PATTERSON.

DIED, September 16, 1901, at his home in Norwood, Pa., in his eighty-second year, DR. CALLENDER PATTERSON, the cause of death being caries of the spinal bones and ulceration of the liver.

Born in Frenchtown, Cecil Co., Md., May 8, 1820, the subject of our sketch when twenty years of age moved to Philadelphia, and in 1850 began the study of dentistry in the office of Dr. Elijah M. Neall, with whom he continued till June, 1853, in which year he began practicing on his own account. His entire professional life of about forty-five years was spent in Philadelphia. He was proficient in both operative and mechanical dentistry, and as well in the manufacture of porcelain teeth, making those used in his own practice for several years, and also supplying other dentists. He was fond of experimenting, ever striving to improve his processes, and in the course of his life took out several patents, some dental and some applicable to other lines of work.

In 1870, leaving his practice in the care of Dr. M. C. Steeves, now of Marion, Ohio, Dr. Patterson made an extended European tour, visiting most of the principal cities of England and the Continent, and bringing back many pleasant memories of kindly intercourse with the prominent American dentists holding enviable professional standing in every European capital.

On his return he resumed his practice, which he did not relinquish until about three years ago.

In 1843 he married Elizabeth P. Drew, of Philadelphia, who died fourteen years ago. Three sons and three daughters survive.

Dr. Patterson was a man of considerable literary ability and contributed many articles and poems, chiefly of a religious character, to various journals. He possessed a charitable, kindly nature, was ever ready to help those in distress, and delighted in dispensing a gracious hospitality, thus demonstrating in his daily life the principles that he upheld. In professional life his ideals were high, and he was never willing to do less than his utmost for the benefit of his clients, nor to descend to any act for his own benefit which would reflect upon a fellow practitioner or lessen the dignity of his chosen profession.

Skillful in his profession, affectionate in disposition, genial and urbane in manners, irreproachable in personal character, his friends were many, and, though he outlived most if not all of those who were his associates in the earlier years of his professional life, many still remain who treasure his memory.

---

## PERISCOPE.

---

**Necessity of Keeping Perfectly Clean a Tooth to be Filled with Gold.**—After the rubber dam is adjusted wash the tooth off with alcohol. Neglect of this precaution is one reason why fillings fail, for if a piece of gold comes in contact with a portion of tooth-surface that is not absolutely clean it will not cohere.—*Dental Digest*.

**Congenital Absence of Temporary Teeth.**—Mr. Cocker (*Journal of the British Dental Association*) reports the case of a boy five years of age who had only erupted the four second temporary molars and in whom the deficiency had been made good by artificial substitutes, which the boy used with comfort and from which he derived great benefit.

**Ethyl Chlorid in Cold Weather.**—In cold weather, when making use of ethyl chlorid for local anesthesia, it is well to warm the part beforehand. This will secure better evaporation and more complete anesthesia. It also prevents waste, as a much smaller amount of the ethyl chlorid will produce the required degree of anesthesia.—*Internat. Journ. of Surgery*.

**Devitalizing Paste.**—The following formula by Dr. E. C. Kirk has proved to be a very satisfactory one:

℞—Acidi arseniosi pulv.,  
Cocainæ hydrochloratis, āā gr. xx;  
Mentholi cryst., gr. v;  
Glycerini ad q. s. fiat pasta.

**Formalin**, besides its germicidal and tannifying properties, possesses a third property which, although seldom mentioned, contributes largely toward making formalin the valuable agent that it is in dental practice in the treatment of root-canals. This third property is its volatility. It expands at ordinary temperature and goes beyond the apex, bringing about sterilization of the canal and of the periapical region.

**To Anneal Steel.**—According to the *English Mechanic*, a very good way to anneal a small piece of steel is to heat it up in a forge as slowly as possible; then take two boards, lay the hot steel between them, and screw them up in a vise. As the steel is hot it sinks into the wood and becomes firmly imbedded in an almost air-tight charcoal bed, and when taken out cold it will be found to be fairly soft; to repeat this process will make it as soft as could be desired.

**Guaiaicol in Dentistry.**—Dr. Chas. P. Holland, in the *Dental Brief*, reports favorably on guaiacol used in pulpitis. In several painful cases of pulp-exposure an application of this agent on spunk brought immediate relief. He also uses guaiacol for capping pulps, in combination with arsenic for devitalizing purposes, and also for odontalgia in children. For this latter purpose he mixes the cement powder with the guaiacol and applies it over the exposure, filling the remaining portion of the tooth with cement.

**How to Clean Blood-stains from Instruments and Fabrics.**—Dr. Bauldiser recommends the use of solutions of tartaric acid for the removal of blood-stains from instruments and fabrics. He has also used it for removing blood-stains from the hands, washing them for this purpose in a solution of a teaspoonful of tartaric acid to about a quart of tepid water. In the case of stained instruments they should be brushed with this solution. In the case of porous fabrics, after submitting them to this solution, they should be squeezed in order to remove as much of the solution as possible.

**Therapeutic Value of Gutta-percha.**—Dr. W. F. Litch (*Dental Brief*) is of the opinion that gutta-percha has a real therapeutic value in the treatment of carious and sensitive dentin, and that this property is very marked in the base-plate variety of this substance owing to the presence of the vermilion used in its coloring. He explains how vermilion, while being an inert substance under ordinary conditions, may be decomposed under the influence of the heat to which the gutta-percha is subjected, with the liberation of mercury in metallic form or as an oxid, with further conversion into a salt of mercury having antiseptic properties.

**How to Clean Burs.**—Have a glass vessel, say a toy tumbler of about one ounce capacity, and keep it half filled with a saturated solution of washing soda, into which drop the burs after use. When they have soaked for an hour or two,—if left longer they do not rust,—the *débris* is quickly removed with a nail-brush. The solution is equally effective for cleansing and renewing the cutting power of corundum points and wheels. These should not be left in for more than three or four hours, as a longer period will soften the shellac used in their composition. After soaking, a nail-brush and warm water will bring back their cutting surface equal to new.—*Quarterly Circular*.

**Facial and Palatal Restoration.**—Dr. Delorme has shown before the Academy of Medicine of Paris (*Revue de Chirurgie*) a soldier, who in attempting to commit suicide shot himself under the chin, the bullet carrying away that part of the palatal vault anterior to the second molar and also the nose. Dr. Delorme operated upon him and was able to make him a membranous palatal vault from the soft tissues of the cheek. This vault is a solid structure of exactly the same size as the natural hard palate and supports a full upper denture. With the soft tissues of the cheeks he has also been able, after continued massage and stretching, to reconstruct a nose a few centimeters in length which remains in position without further support. This method has given him such remarkable results that he has decided to use it in the future in all such cases whenever loss of substance has taken place.



**Nargol in Treatment of Empyema of the Antrum of Highmore.**—Dr. A. G. Wippert, in the *Medical News*, reports the successful treatment of empyema of the antrum with solutions of nargol, a compound of silver and nucleinic acid. As is well known, the salts of silver,—the nitrate in particular,—have been successfully used for the treatment of purulent conditions. Unfortunately, however, nitrate of silver is a very effective coagulant and is on this account self-limited in its action. In nargol this property, as well as that of staining the tissues or clothing, is absent. Nargol is a very efficient germicide, and with it Dr. Wippert has treated successfully three cases of empyema. He uses it in 0.25 per cent. solutions.

**Immediate Extirpation of the Pulp.**—Hermann Muller (*Archiv für Zahnheilkunde*) uses for the immediate extirpation of the pulp a mixture of equal parts of carbolic acid and caustic potash (Robinson's remedy). He uses a thick and resistant nerve broach, around the point of which he winds a few fibers of cotton. The broach is dipped in the mixture and is applied upon the exposed tissue, gradually increasing the pressure. In two minutes' time the entire contents of the pulp-canal should be saponified. The opening of the pulp-canal is then freely enlarged with a large rose bur, and the pulp removed with a stiff barbed broach. The root-canal is then freely irrigated with water and filled. The operation is almost painless.

**To Make Gold Cohere Under All Conditions.**—When it is advisable to repair an old gold filling without removing the gold already in position, it may be accomplished by following the directions here outlined. (1) Apply the rubber dam. (2) Clean the tooth carefully with lukewarm water. (3) Wash it with sulfuric ether, to dissolve any fatty or oily substance. (4) Go over the filling with alcohol. (5) Dry with warm air. (6) Carefully anneal a pellet of No. 4 gold. (7) With a very fine pointed plugger go over the entire surface of the gold put on, first with hand pressure, then mallet it well. (8) After that go over it with a convex plugger. (9) The direction of the force should be at right angles to the surface worked upon. (10) If you have followed these directions in applying two layers, you can go ahead in the usual manner and use either pellets or leaf gold. Having tested it in various positions, I find it entirely satisfactory except where the filling is subject to great stress, when it is ill-advised.—X. DODEL in *Ohio Dental Journal*.

**Bleaching Enamel.**—The rubber dam should be applied and the tooth dried with a blast of air as hot as the patient can comfortably bear. Then a thin layer of cotton soaked in 25 per cent. pyrozone should be laid upon it so that the stained enamel shall be thoroughly soaked. Next, a broad, flat, hot instrument should be placed upon the cotton and the steam of the pyrozone be thus driven into the substance of the enamel. The operator's hands should have been previously rubbed with oil and should be protected by a large piece of rubber dam, as the steam generated by the hot instrument is caustic. The process should be continued for about ten minutes, when the cotton should be removed and a ball burnisher, as hot as the patient can comfortably bear, should be worked over the brown stain, driving out of the enamel the pyrozone that it has previously absorbed and bleaching the stain to an appreciable extent. This process should be continued for an hour, when the patient should be dismissed, to return again for treatment at intervals of not less than two days to allow the pulp to recover fully from any possible disturbance caused by the operation. This by way of caution; no patient of mine, however, has ever complained of anything more than a few insignificant nerve-thrills that were cheerfully borne in view of the great improvement resulting.—JOS. HEAD in *Dental Brief*.

**To Wax Together a Broken Vulcanite Plate.**—A dentist often needs three hands; for instance, when he attempts to wax together the separate parts of a broken vulcanite plate. Two hands are necessary to properly hold the denture. A third hand, or assistant, may be found in the form of a device which holds the wax over the denture until it melts, and then allows it to drop. Take a bar of metal about one-twelfth of an inch in thickness and solder to one end a small spoon-shaped piece large enough to hold as much wax as is ordinarily employed in waxing together the broken parts of the plate. While the other end of the bar is stuck into a hole in the table, or is held by a vise, let this spoon-shaped end be arched forward so as to rest about three inches above the table. Make a hole in the bottom of the spoon about one-twelfth of an inch in diameter. In this little spoon place the wax. Then set an alcohol flame under the bar an inch or two from the wax, so that the heat will creep down the bar to the wax. Soon it will melt and drop. The broken plate can thus be held steady by two hands resting on the table.—*Dental Brief.*

**An Artificial Larynx.**—Dr. Martin, of Lyons (*Revue de Stomatologie*), exhibited at one of the recent meetings of the Société de Stomatologie a patient in whom an artificial larynx had been placed following a total laryngectomy. In order to prevent the stenosis commonly following operations of this kind and also to reserve sufficient room for an appliance, Dr. Martin, immediately after the operation and before the surgeon placed the suture, inserted a block of rubber in bulk almost equal to that of the larynx removed,—thus applying the principles of immediate prosthesis that have given him such good results in resections of the maxillæ. This rubber block was fixed by means of a thread to the tracheal canula which the patient had long been wearing. Two months after the operation Dr. Martin undertook the construction of an artificial larynx which would perform the functions belonging to this organ, that is, speech, deglutition, and respiration. The appliance as made by Dr. Martin is composed of three principal portions. First, the tracheal canula; second, a phonating apparatus (vibratory reed); third, a resonance chamber,—this being chiefly, however, a protective appliance. The following is a detailed description of the three parts:

**Tracheal canula.** This is an ordinary tracheal canula which gives a point of support to the whole appliance and which fixes it. At the upper portion of the curve of the appliance and within a few millimeters of its external orifice it communicates with the artificial larynx. It is through this opening that the expired air passes. The external end of this canula is provided with a safety valve in case the appliance becomes obstructed.

**Phonating apparatus.** This is formed by a conical metallic tube the lumen of which is quadrangular in section. The small extremity of the tube is directed upward and is covered by a rubber tube stretched across it, this forming the vibratory reed. The free margins of this stretched rubber tube form two cords which vibrate with the passage of the column of air and produce sound. At the posterior aspect of this tube is an opening provided with a rubber valve. This permits the passage of air into the lungs. This valve works from without inward.

**Resonance (or protective) chamber.** It is not probable that the resonance of this chamber is very great. Its more important function is, in fact, the protective one and it is certainly the most original portion of the apparatus. This chamber, which incloses the phonating portion of the apparatus and which is attached at its inferior portion, is made of hard rubber. Its upper portion is covered with a metallic wire gauze which is fine enough to prevent the entrance of particles of food *débris* while permitting the passage of air and sound. Liquid substances hence pass only in small quantity, and fall to the bottom of the chamber, thence escaping through a tube situated at its lower

and posterior portion. This tube, a few centimeters in length, penetrates the esophagus and serves the purpose of a drain for all the alimentary *débris* not caught by the metallic gauze, and also for the bronchial secretions expelled through the cords of the vibratory reed.

Toward the lower portion of the resonance chamber and around it there is an enveloping collar of thin soft rubber which applies itself against the surrounding tissues and prevents the infiltration of liquids into the trachea.

The voice is always of the same pitch, but Dr. Martin hopes that by some modifications he may succeed in rendering it less monotonous.

---

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

---

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

---

- Ausfeld (R.)** Wie schaffen und erhalten wir uns gesunde Zähne? Berlin, 1901, H. Steinitz, 79 pp. 12°.
- Béal (G.)** Maladies de la bouche et des dents. Paris, 1902. 12°.
- Bild (A.)** \*Die Entwicklungsgeschichte des Zahnsystems bei *Sus domesticus* und das Verhältniss der Lippenfurchen anlage zur Zahnleiste. Breslau, 1901, 66 pp., 1 l., H. Fleischmann. 8°.
- Dorion (R. G. A.)** \*L'amygdalite pharyngée aiguë primitive chez les enfants. Lille, 1901, 68 pp. Vve. A. Masson. 8°.
- Finkbeiner (W.)** Wie pflege und erhalte ich meine Zähne? Reval, 1901, F. Wassermann, 10 pp. 8°.
- Francia (A.)** Storia evolutiva della odontotecnica atteverso i secoli dal 300 (A. C.) al secolo xx. Napoli, 1901, 23 pp., Bideri. 16°.
- Giuseppe (G.)** Della prima e seconda dentizione. Napoli, 1901, S. Felice, 60 pp. 8°.
- Grünwald (L.)** Atlas und Grundriss der Krankheiten der Mundhöhle, des Rachens und der Nase. 2. Aufl. München, 1902, J. F. Lehmann, xx, 42 pl., 42 l., 212 pp. 12°.
- Lécuyer (A.)** La fièvre aphteuse; sa prophylaxie et les moyens rationnels de l'éviter. Paris, 1901, 34 pp., Asselin & Houzeau. 8°.
- Lombard (A.)** Comment on defend ses dents. Paris [1901], 40 pp., 1 pl., 1 l., Med. Française. 12°.
- Ritter.** Der üble Mundgeruch; seine Ursachen und seine Behandlung. Halle a S., 1902, C. Marhold, 12 pp. 8°.
- Röse (C.)** Anleitung zur Zahn- und Mundpflege. 6. Aufl. Jena, 1901, G. Fischer, 59 pp. Sm. 4°.
- Schech (P.)** Die Krankheiten der Mundhöhle, des Rachens und der Nase. Mit Einschluss der Rhinoskopie und der local-therapeutischen Technik für praktische Aerzte und Studierende. 6. Aufl. Leipz. & Wien, 1902, F. Deuticke, xi, 1 l., 410 pp. 8°.
- Zilla (I.)** \*Die Beziehungen der Rachenmandelvergrösserung zur Gaumen-, Schädel-, Ubergesichts- und Nasenbildung. Breslau, 1901, 20 pp., 1 l. 8°.

**Aievoli.** Ancora su la tubercolosi delle glandole salivari. Morgagni, Milano, 1901, xliii, 703-708, 1 pl.—**Ames (W. V.-B.)** Splints for retaining loose teeth. Dental Digest, Chicago, 1901, vii, 969-979.—Some amalgam experiments. Dental Rev., Chicago, 1901, xv, 1121-1123. [Discussion], 1176-1183.—A bridge splint for desperate cases of pyorrhoea. Dental Reg., Cincin., 1901, lv, 545-550.—**Amoedo (O.)** Les épulis; leur traitement à leur début par le chirurgien-dentiste. Odontologie, Par., 1901, 2. s., xiii, 408-422.—Les dents du Pithecanthropus erectus de Java. *Ibid.*: 361-368.—Also: Rev. odont., Par., 1901, xx, 447-454.—Also, transl.: Dental Cosmos, Phila., 1901, xliii, 1369-1374.—**Appfelstaedt.** Der prothetische Ersatz nach Ober- und Unterkieferresektionen. Zahnärztl. Rundschau, Berl., 1901, x, No. 486.—**Bannister (E. H.)** Simple epulis of lower jaw of extraordinary size; successful removal by resection of jaw. Brit. M. J., Lond., 1901, ii, 1598.—**Barrett (W. C.)** Attachment of implanted teeth. Dental Digest, Chicago, 1901, vii, 879-893.—**Bauchwitz**



- (M.) *Sensitives Dentin und seine Behandlung mit Kohlensäure.* Zahnärztl. Rundschau, Berl., 1901, x, No. 489.—**Baudouin** (M.) *Les anomalies dentaires dans l'histoire; la canine géante de Geoffroy la Grand'dent.* Gaz. méd. de Par., 1901, 12. s., i, 361-363.—**Bauer** (S.) *Das Bonwill'sche Articulationssystem.* [Hungarian text] Magyar fogász szemle. A stomatol. [etc.], Budapest, 1901, v, 37-46.—**Baumgarten** (E.) *Pruritus senilis linguæ.* Ungar. med. Presse, Budapest, 1901, vi, 713-715.—**Beisswenger** (O.) *Ein neuer Instrumententisch.* Zahnärztl. Rundschau, Berl., 1901, x, No. 476.—**Belcher** (H. L.) *Education of the public in regard to dental hygiene.* Dental Digest, Chicago, 1901, vii, 867-871.—**Bosworth** (F. H.) *The tonsils from a purely clinical point of view.* Tr. Am. Laryngol. Ass., N. Y., 1901, 85-89.—**Brandreth** (F.) *Making gold solder.* Items Interest, N. Y., 1901, xxiii, 885.—**Braun** (H.) *Ueber Aether-Chloroform-Mischnarkosen.* Zahnärztl. Rundschau, Berl., 1901, x, No. 474; 477.—**Broomell** (I. N.) *Burs and bur shavings.* Dental Cosmos, Phila., 1901, xliii, 1357-1369.—**Bywater** (H. H.) *A case of blind tongue.* J. Brit. Dent. Ass., Lond., 1901, xxii, 621.—**Calderone** (C.) *Contributo allo studio delle glandole a secrezione grassa nella mucosa orale dell'uomo.* Gior. ital. d. mal. ven., Milano, 1901, xxxvi, 572-581, 1 pl.—**Callahan** (J. R.) *Die Behandlung der Wurzelcanäle.* J. f. Zahnh., Berl., 1901, xvi, 217.—**Callet** (L.) *Abcès palatin d'origine dentaire.* Gaz. méd. de Picardie, Amiens, 1901, xix, 269-271.—**Capon** (F. J.) *Lectures on crown- and bridge-work.* Dominion Dent. J., Toronto, 1891, xiii, 413-417.—**Carpenter** (G. T.) *Simple gingivitis; its etiology and treatment.* Internat. Dent. J., Phila., 1901, xxii, 836-838.—**Casselberry** (W. E.) *Serous disease of the maxillary antrum with a report of two cases.* Tr. Am. Laryngol. Ass., N. Y., 1901, 46-54.—**Chauveau** (C.) *Pathologie pharyngée de Paracelse.* Ann. d. mal. de l'oreille, du larynx [etc.], Par., 1901, xxvii, pt. 2, 458-473.—**Chemodanoff** (M. M.) *[Breaking neuro-extractors in root canals; consequences and treatment.]* Odont. obozr., Mosk., 1901, iii, 65; 187.—*[Absence of pulp does not prevent the absorption of the roots of milk teeth.]* *Ibid.*: 129; 194; 247.—**Chompret.** *Projet de création d'un laboratoire centrale de prothèse dans les hôpitaux de Paris.* Rev. de stomatol., Par., 1901, viii, 485-493.—**Chompret et de Névrezé** (B.) *Leucoplasie buccale aiguë syphilitique.* *Ibid.*: 494-505.—**Christ** (J.) *Geschichtliche zur Behandlung der Gaumendefecte.* Janus, Amst., 1900, vi, 531; 587.—**Christensen** (C.) *Röhren-Blocks: Continuous-Gum-Arbeit auf Gold-Basis.* Cor.-Bl. f. Zahnärzte, Berl., 1901, xxx, 343-348.—*Also:* Zahnärztl. Wechnbl., Hamb., 1901, xv, 170-172.—**Clark** (C. A.) *Dental radiography.* J. Brit. Dent. Ass., Lond., 1901, xxii, 610-617.—**Clow** (G. B. N.) *Preven-*
- tion of nausea and vomiting attending anesthesia.* Internat. J. Surg., N. Y., 1901, xiv, 371.—**Cohn** (K.) *Die Veränderung der Kieferform durch Druck.* Deutsche Monatschr. f. Zahnh., Leipz., 1901, xix, 493-495.—*Combination of gold with porcelain.* Dental Digest, Chicago, 1901, vii, 1009-1011.—**Comby.** *Stomatite putacée dans la rougeole.* Bull. Soc. de pédiat. de Par., 1901, iii, 1-3.—**Constant** (T. E.) *The movements of the mandible.* Brit. J. Dent. Sc., Lond., 1901, xlv, 1068-1070.—**Cruet** (L.) *L'enseignement de la prothèse.* Rev. de stomatol., Par., 1901, viii, 481-485.—**Cummings** (James). [1824-1901.] (Obituary.) Austral. Dent. J., Melbourne, 1901, v, 71.—**Curtis** (G. L.) *Influence of electric ozonation on disease.* Dominion Dent. J., Toronto, 1901, xiii, 425-428.—**Debrie** (E.-J.) *Bec de lièvre congénital compliqué de fissure alvéolo-palatine avec saillie et torsion des os inter-maxillaires internes.* Province méd., Lyon, 1901, xv, 543-546.—**Delair.** *Méthode nouvelle de prothèse restauratrice vélo-palatine.* Odontologie, Par., 1901, 2. s., xiii, 353-358.—**Dietrich.** *Kalium permanganicum zur Wurzelsterilisation.* Zahnärztl. Wechnbl., Hamb., 1901, xv, 169.—**von Donop** (F. R.) *Accumulatoren.* Zahntech. Rundschau, Berl., 1901, No. 476.—**Doucournau** (F.) *Fistule sous-mentonnière d'origine dentaire par mortification pulpaire traumatique.* Rev. odont., Par., 1901, xx, 444-447.—**Ehrmann** (J.) *Note sur une anomalie rare de la voûte palatine.* Rev. d'orthop., Par., 1901, 2. s., ii, 401-404, 1 pl.—**Ekstein.** *Ueber die leichtflüssigen Metalle.* Zahnärztl. Rundschau, Berl., 1901, x, No. 482.—**Ekström** (I.) *Die Cariesfrequenzuntersuchungen in verschiedartiger Beleuchtung.* J. f. Zahnh., Berl., 1901, xvi, 221-223.—**Elliott** (W. St. G.) *Painless dentistry.* Items Interest, N. Y., 1901, xxiii, 904-907.—**Escher** (O.) *Künstliche Zahnkronen.* Deutsche Monatschr. f. Zahnh., Leipz., 1901, xix, 496-501.—**Etchepareborda** (N.) *Inclusion d'une dent de sagesse dans la partie supérieure de la branche du maxillaire inférieur.* Odontologie, Par., 1901, 2. s., xiii, 393-400.—**Feliciani** (I.) *Effetti eccezionali di stomatite su inferma pellagrica.* Clin. dermosifilopat. d. r. Univ. di Roma, 1901, xix, 97-111.—**Fenchel.** *Exacte Messungsmethoden du Formveränderung von Amalgamen.* Cor.-Bl. f. Zahnärzte, Berl., 1901, xxx, 289-293.—*Phosphat cimente.* *Ibid.*: 303-314.—**Finger** (E.) *Ueber syphilis der Mundhöhle.* Wien. med. Wechnsch., 1901, li, 1947; 2005; 2117.—**Flagg** (E. M.) *Jumping the bite (backward).* Dental Brief, Phila., 1901, vi, 705-711.—**Fletcher.** *The tongue as a breeding place for bacteria.* [Abstr.] Internat. Dent. J., Phila., 1901, xxii, 832-836.—**Franchette.** *Cours de mécanique et physique appliquées à l'art dentaire.* Rev. odont., Par., 1901, xx, 434-439.—**Gabell** (D.) *On the exhibition of microscope specimens for teaching purposes.* J. Brit. Dent. Ass., Lond.,

- 1901, xxii, 600-610.—**Gardner** (H. B.) The administration of anæsthetics for dental operations. *Ibid.*: 588.—**Gaucher** (E.) et **Lacapère**. Syphilis cérébrale (syphilis ignorée) diagnostique par l'existence d'une leucoplasie linguale et guérie par les injections de benzoate de mercure. *Bull. et mém. Soc. med. de hôp. de Par.*, 1901, 3. s., xviii, 1213-1216.—**Gerold** (G.) Was kann die Schule thun zur Aufklärung des Volkes über die Bedeutung der Zahnpflege für die Gesundheit. *Wien. zahnärztl. Monatsschr.* 1901, iii, 455-471.—**Gilmer** (T. L.) Odontomes. *Dental Digest*, Chicago, 1901, vii, 953-963, 3 pl.—*Also*: *Dental Reg.*, Cincin., 1901, lv, 541-545.—**Godard** (C. L.) Incisor and profile; a study in comparative anatomy. *Dental Digest*, Chicago, 1901, vii, 841-855.—**Gouka**. Sur l'origine de certains kystes de la muqueuse des gencives.—*Polnisch. Arch. f. biol. u. med. Wissenschaft.*, *Lemberg*, 1901, i, 52-54, 1 pl.—**Goodale** (J. L.) The formation of cysts in the faucial and pharyngeal tonsils. *Boston M. & S. J.*, 1901, cxlv, 677-679.—*Retrograde metamorphosis in the faucial tonsils.* *Tr. Am. Laryngol. Ass.*, N. Y., 1901, 90-101.—**Goode** (G.) Sterilization of instruments. *Dental Digest*, Chicago, 1901, vii, 855-858.—**Goslee** (H. J.) The shell or telescope crown. *Items Interest*, N. Y., 1901, xxiii, 894-903.—**Grady** (R.) [A case of irregularity treated by the Knapp system.] *Dental Cosmos*, Phila., 1901, xliii, 1416.—**Greve**.—*Ueber das Wesen und die Differentialdiagnose der Caries alveolaris specifica.* *Zahnärztl. Rundschau*, Berl., 1901, x, No. 487.—*Zahn-schmerzen.* *Reichs-Med.-Anz.*, *Leipz.* 1901, xxvi, 404; 424; 444; 463.—*Also*: *Zahnärztl. Wchnbl.*, *Hamb.*, 1901, xv, 137; 154; 172.—**Griffin** (E. H.) Mycosis of the tonsil and base of the tongue. *N. York M. J.*, 1901, lxxiv, 1099.—**Gripat** (H.) Mauvaises dents, mauvaise nutrition. *Arch. méd. d'Angers*, 1901, v, 378-383.—**Guinon** (L.) Stomatite érythémato-pultacée sans rougeole. *Bull. Soc. de pédiat. de Par.*, 1901, iii, 75.—**Guttmann**. Neue Methoden f. Herstellung und Anwendung von Porzellan-Einlage-Füllungen. *Cor.-Bl. f. Zahnärzte*, Berl., 1901, xxx, 285-289.—**Hahn**. Publikum und Ministerial-Erlass. *Zahnärztl. Rundschau*, Berl., 1901, x, No. 478; 479.—*Hygienische Verbesserungen im Operationszimmer.* *Deutsche Monatschr. f. Zahnh.*, *Leipz.*, 1901, xix, 501-505.—**Hamisfar** (M. D.) Biology, microscopy and clinical chemistry as prime factors in scientific diagnosis. *West. Dent. J.*, *Kansas City*, 1901, xv, 505-510.—**Hanaford** (M. L.) The filling of the root canals of teeth. *Dental Rev.*, *Chicago*, 1901, xv, 1111-1120.—**Hanusa** (C.) Behandlung der Krankheiten der weichen Zahnschubstanzen. *Zahnärztl. Wchnbl.*, *Hamb.*, 1901, xv, 161-163.—**Harlan** (A. W.) Some recent additions to dental medicine. *Dental Rev.*, *Chicago*, 1901, xv, 1134-1138.—**Haskell** (L. P.) Failures in artificial dentures. *Dental Brief*, *Phila.*, 1901, vi, 712.—**Head** (J.) Bleaching enamel. *Dental Digest*, *Chicago*, 1901, vii, 1002-1005.—**Herber** (C.) Mundwasser. *Cor.-Bl. f. Zahnärzte*, *Berl.*, 1901, xxx, 336-342.—**Hull** (J. W.) Dentistry as a fine art. *West. Dent. J.*, *Kansas City*, 1901, xv, 481-485.—**Hungerford** (C. L.) Etiology of disease. *Dental Digest*, *Chicago*, 1901, vii, 858-867.—**Irwin** (A.) Third International Dental Congress. *Dental Brief*, *Phila.*, 1901, vi, 714-716.—**Isaac** (H.) Syphilis und Quecksilber im Munde. *Zahnärztl. Rundschau*, *Berl.*, 1901, x, Nos. 488; 489.—**Jung**. Eine neues Verfahren zur Befestigung künstlicher Zähne ohne Lösung. *Ibid.*: No. 481.—**Jungnickel** (H.) Beitrag zur Casuistik der Kiefercysten. *Ibid.*: Nos. 483; 484.—**Kalivoda** (K.) Die Bedeutung der Schleimhaut des Mundes und des Rachens bei Infektionskrankheiten. *Ungar. med. Presse*, *Budapest*, 1901, vi, 663.—**Kirk** (E. C.) The International Dental Federation. *Dental Reg.*, *Cincin.*, 1901, lv, 561-569.—**Kirk** (H. M.) Partial dentures and their retention. *Ohio Dent. J.*, *Toledo*, 1901, xxi, 557-562.—**Klix**. Zur Hygiene des Mundes. *Cor.-Bl. f. Zahnärzte*, *Berl.*, 1901, xxx, 314-318.—**Knupfer** (F.) Verschlucktes Gebiss in der Speiseröhre. *Zahntech. Rundschau*, *Berl.*, 1901, No. 481.—**Lange** (F.) Plastic operation after removal of tumor of the upper jaw, including soft parts of the cheek. *Ann. Surg.*, *Phila.*, 1901, xxxiv, 836-838.—**Laury**. Unsere Amalgame. *Zahnärztl. Rundschau*, *Berl.*, 1901, x, No. 479.—**Lebesque**. Un cas de résection du maxillaire supérieur. *J. de chir. et Ann. Soc. belge de chir.*, *Brux.*, 1901, i, 670.—**Long** (Thomas Alexander.) [1836-1901.] (Obituary.) *Dental Cosmos*, *Phila.*, 1901, xliii, 1458-1460, port.—**Longley** (F. McL.) Making amalgam alloy. *Items Interest*, N. Y., 1901, xxiii, 888.—**Lonnon** (F.) Immediate regulation. *J. Brit. Dent. Ass.*, *Lond.*, 1901, xxii, 618.—**Lüttge** (G.) Zahnuntersuchungen. *Zahntech. Rundschau*, *Berl.*, 1901, No. 486.—**McCoy** (J. C.) The extraction of crowded or misplaced teeth. *Pacific Dent. Gaz.*, *San Fran.*, 1901, ix, 810-813.—**Madzsar** (J.) Untersuchungen über das Verhalten der Sporen des bac. gangr. pulpae gegenüber des desinficientien [Hungarian text.] *Magyar fogász. szemle.* A stomatol. [etc.], *Budapest*, 1901, v, 167-171.—**Maggs** (W. A.) Notes on the dentition of the sphendon. *Brit. J. Dent. Sc.*, *Lond.*, 1901, xlii, 1059-1065.—**Mahu** (G.) Syphilis héréditaire des nouveau-nés; gomme du voile du palais chez un nourrisson de deux mois. *Ann. de méd. et chir. inf.*, *Par.*, 1901, v, 765-768.—**Makuen** (G. H.) Cleft palate and its relation to speech. *Tr. Am. Laryngol. Ass.*, N. Y., 1901, 116-122.—**Marshall** (J. S.) Dentists in the U. S. Army. *Dental Reg.*, *Cincin.*, 1901, lv, 550-561.—*Organization of the dental corps of the U. S. Army, with suggestions upon the educational requirements for military dental practice.*—*Dental Digest*, *Chicago*,



- 1901, vii, 893-907.—**Mayer (E.)** Empyema of the antrum of Highmore in young infants. *Tr. Am. Laryngol. Ass.*, N. Y., 1901, 54-64.—**Mills (W. A.)** Restoration of the normal outline of gum-tissue by mechanical means. *Dental Brief*, Phila., 1901, vi, 713.—**Mór (K.)** Cement-Zähne. [Hungarian text.] *Magyar fogász szemle. A stomatol. [etc.]*, Budapest, 1901, v, 190-193.—**Morgenstern (M.)** Einige Strittige Fragen aus der Histologie und Entwicklungsgeschichte der Zähne. *Zahnärztl. Rundschau*, Berl., 1901, x, No. 486.—**Moyer (H. A.)** To make a Richmond crown with soldered gold filling. *Ohio Dent. J.*, Toledo, 1901, xxi, 553.—**Nevius (L. W.)** How to generate pure nitrous oxide gas and administer the same. *West. Dent. J.*, Kansas City, 1901, xv, 486-491.—**Noyes (F. B.)** Early embryonic development and the formation of the mouth and nose cavities. *Dental Rev.*, Chicago, 1901, xv, 1124-1134. [Discussion], 1174-1176.—**Oehl (E.)** Sul diverso valore diastasio della saliva umano. *Arch. ital. de biol.*, Turin, 1901-2, xxxvi, 178-181.—**Parker (F. M.)** Teachers and teaching. *Pacific Dent. Gaz.*, San Fran., 1901, ix, 793-802.—**Patterson (J. D.)** Physiology, etiology, hygiene, prophylaxis and electricity. Report of section IV, National Dental Association. *Dental Digest*, Chicago, 1901, vii, 987-1001.—**Pernice (B.) & Riggio.** Intorno all'alta epizootica. *Riforma med.*, Roma, 1901, xvii, pt. 4, 278-282.—**Peirce (C. N.)** Bacteriology. *Dental Digest*, Chicago, 1901, vii, 964-969.—**Plough (A. L.)** Etica dental. *Rev. dent. amer.*, Philad., 1901, ix, 201-208.—**Polscher (A.)** Ueber die Zahnwasser. *Zahntech. Rundschau*, Berl., 1901, No. 479.—**Port (G.)** Die Herstellung dauerhafter und bemalbarer Modelle. *Zahnärztl. Wchnbl.*, Hamb., 1901, xv, 145; 153.—**Also:** J. f. Zahnh., Berl., 1901, xvi, 197; 205.—**Die Röntgenphotographie in der zahnärztlichen Diagnostik.** *Wien. zahnärztl. Monatsschr.*, 1901, iii, 453-455.—**Price (C. R.)** The defect of the dental curriculum. *Dental Rec.*, Lond., 1901, xxi, 529-533.—**Pridham (W. C.)** Curious symptoms after extraction of teeth. *Lancet*, Lond., 1901, ii, 1336.—**Purrrington (W. A.)** The theory and enforcement of dental legislation. *Dental Cosmos*, Phila., 1901, xliii, 1437-1450.—**Quintin (L.)** Denti-friegen. *Zahnärztl. Rundschau*, Berl., 1901, x, No. 482; 483; 488.—**Read (T. G.)** Some chemical changes occurring in the mouth during the mastication of bread composed of roller flour. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 590-596.—**Reed (W. L.)** The immediate and bloodless removal of the pulp. *West. Dent. J.*, Kansas City, 1901, xv, 491.—**Reeves (W. T.)** Bodies and color effects in porcelain inlay work. *Dental Digest*, Chicago, 1901, vii, 1005-1009.—**Report of the committee on Does proximity of oxyphosphate endanger the pulp?** *Pacific Dent. Gaz.*, San Fran., 1901, ix, 807-809.—**Rhodes (J. E.)** Chancre of tonsil, with report of thirty-five cases. *Tr. Am. Laryngol. Ass.*, N. Y., 1901, 27-38, 1 tab.—**Also:** *Am. Med.*, Phila., 1901, ii, 944-947.—**Ritter (P.)** Ueber missglückte Fälle bei Kronen- und Brücken-Arbeiten. *Cor.-Bl. f. Zahnärzte*, Berl., 1901, xxx, 293-303.—**Robbins (C.)** Double-pin bicuspids crown. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 617.—**Robin (P.)** La crèpitation dentaire; nouveau signe clinique de l'ostéo-périostite alvéolo-dentaire phlegmoneuse. *Rev. de stomatol.*, Par., 1901, viii, 508-512.—**Rodier (H.)** Pseudo-accidents de dent de sagesse par eruption tardive chez un vieillard édenté. *Ibid.*: 505-508.—**Rogers (J. T.)** History of general surgical anesthesia. *St. Paul M. J.*, St. Paul, Minn., 1901, iii, 815-822.—**Rushton (W.)** The teeth of the soldier. *Dental Rec.*, Lond., 1901, xxi, 545-548.—**Russell (J. W.)** Interdental splint for fractures of the jaw. *Brooklyn M. J.*, 1901, xv, 518-520.—**Schambaugh (G. E.)** On sarcoma of the radix linguae, with report of a case. *Am. J. M. Sc.*, Phila., 1902, n. s., cxxiii, 115-123.—**Scholze (P.)** Erfahrungen mit zwei verschiedenen elektrischen Mundbeleuchtung-apparaten. *Zahntech. Rundschau*, Berl., 1901, No. 477.—**Schröder.** Ein seltener Fall von partieller Spaltung des Gaumens. *Zahnärztl. Rundschau*, Berl., 1901, x, Nos. 430, 480.—**Schröder (H.)** Ueber Konstruktion und Wirkung der Obturatoren. *Ibid.*: Nos. 475.—**Seigle.** De l'unification des méthodes de redressement à propos d'un cas. *Odontologie*, Par., 1901, 2. s., xiii, 401-407.—**Senn (N.)** Carcinoma of parotid gland. *Med. Standard*, Chicago, 1901, xxiv, 653.—**Sfrei (P.)** Entwicklungsgeschichte der Zahntechnik bis in die Mitte des 19. Jahrhunderts. *Zahnkunst*, Bresl., 1901, v, Nos. 37; 38; 39; 41; 42; 43; 44; 45; 47.—**Siredley (A.)** Stomatite ulcéromembraneuse, avec bacilles fusiformes et spirilles de Vincent, traitée par le bleu de méthylène. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1901, 3. s., xviii, 1109-1113.—**Smith (A. H.)** Dentine. *Dental Rec.*, Lond., 1901, xxi, 534-538.—**Smith (D. D.)** Oral prophylaxis. *Internat. Dent. J.*, Phila., 1901, xxii, 817-831.—**Soaje (E.)** Amigdalitis ulcero-membranosas. *An. san. mil.*, Buenos Aires, 1901, iii, 909-918.—**Spiller (W. G.)** and **C. H. Frazier.** The division of the sensory root of the trigeminus for the relief of tic douloureux; an experimental, pathological and clinical study, with a preliminary report of one surgically successful case. *Phila. M. J.*, 1901, viii, 1039-1049.—**Stearns (C. H.)** Mallet as a source of energy. *Dental Digest*, Chicago, 1901, vii, 980-987.—**Stelwagon (H. W.)** A report of two cases of persistent exfoliation of the lips. *Tr. Am. Dermat. Ass.*, 1900, Chicago, 1901, 101-110.—**Stephan (J. F.)** Nitrous oxide and oxygen as an anæsthetic. *Ohio Dent. J.*, Toledo, 1901, xxi, 563-568.—**Stössel (M.)** Die Uhreberrechte. *Zahntech. Rundschau*, Berl., 1901, Nos. 478; 481; 482.—**Storey (J. E.)** Tin-foil fillings. *Items Interest*, N. Y., 1901, xxiii, 886.—**Sturridge (E.)** The



How bicuspid crown and saddle-back tooth. *J. Brit. Dent. Ass., Lond., 1901, xxii, 619.*—Contour gold-filling with No. 5 soft foil. *Ibid.: 619.*—Szabo (J.) Bericht über die 40 Versammlung der deutschen Zahnärzte. [Hungarian text.] Magyar fogász. szemle. A stomatol. [etc.], Budapest, 1901, v, 135-139.—Tamayo (J. A.) The intervention of the dentist in the cure of syphilis. *Items Interest, N. Y., 1901, xxiii, 881-885.*—Tendler (D. S.) [Partial necrosis of the upper jaw, complicated with inflammation of the mucosa of the antrum of Highmore.] *Zubovrach. vestnik, St. Petersburg, 1901, xvii, 251-253.*—Thompson (A. H.) Evolution of the premolars. *Dental Digest, Chicago, 1901, vii, 871-879.*—Thorpe (B. L.) Plan and scope of an International Dental Congress during World's Fair, 1903. *Internat. Dent. J., Phila., 1901, xxii, 839.* *Ibid.: Items Interest, N. Y., 1901, xxiii, 892.*—Tiessen. Die Erfindung des Lachgases. *Zahnärztl. Wechnbl., Hamb., 1901, xv, 163.*—Tomes (C. S.) On the motions of the mandible. *J. Brit. Dent. Ass., Lond., 1901, xxii, 585-588.*—Also: *Dental Brief, Phila., 1901, vi, 726-732.*—Treuenfels (P.) Mikroskopische Untersuchungen über die Resorption der Milchzähne. [Abstr.] *J. f. Zahnh., Berl., 1901, xvi, No. 19.*—Trofimoff (V. T.) [Partial necrosis of the alveolar processes of the jaws following typhoid fever.] *Zubovrach. vestnik, St. Petersburg, 1901, xvii, 334-336.*—Tschirner (A.) The detrimental effects of soluble organic substances in dental cements. *West. Dent. J., Kansas City, 1901, xv, 501-505.*—Tseitlin (K.) [Fracture of the mandible in a girl 2 years old.] *Zubrovach. vestnik, St. Petersburg, 1901, xvii, 242-247.*

—Van Marter (James Gilbert) [1835-1901.] (Obituary.) *Dental Cosmos, Phila., 1901, xliii, 1458.*—Walkhoff. Ueber neuere Principien und Methoden zur Beseitigung des Schmerzes beim Ausbohren der Zähne. *J. f. Zahnh., Berl., 1901, xvi, 213-216.*—Waterbury (J. E.) The other side of the question. *Pacific Dent. Gaz., San Fran., 1901, ix, 802-807.*—Weidner. Künstliche Zähne. *Zahnärztl. Wechnbl., Hamb., 1901, xv, 138.*—Weighton (H.) A case of compound fracture of both jaws. *J. Brit. Dent. Ass., Lond., 1901, xxii, 622.*—Welke (F.) Abdrucknehmen mit Gips. *Zahnkunst, Bresl., 1901, v, No. 47.*—Werkenthin (A.) Die Macht in uns selbst. *Zahnärztl. Rundschau, Berl., 1901, x, No. 478.*—Wingrave (W.) Tonsillotomy rash. *Tr. Am. Laryngol. Ass., N. Y., 1901, 106-108.*—Witthaus. A combination filling. *J. Brit. Dent. Ass., Lond., 1901, xxii, 596-600.*—Wolfram (J.) Ueber die leichtflüssigen Metalle. *Zahnärztl. Rundschau, Berl., 1901, x, Nos. 484; 485; 487.*—Woods (Alice M.) A case of progressive unilateral atrophy of the face and tongue. *Occidental M. Times, San Fran., 1901, xv, 437-439.*—Worm. Die Hebung des zahnärztlichen Standes und die Technikerfrage. *Zahnärztl. Rundschau, Berl., 1901, x, No. 477.*—Wright (C. M.) Diathesis. *Dental Cosmos, Phila., 1901, xliii, 1374.*—Zemblinoff (V.) [Burn of the uvula by hot tea as a cause of blood-spitting.] *Protok. i trudi Obsh. Kaluzh. vrach. (1900), 1901, 60-63.*—Zsigmondy (O.) & R. Weiser. Die Stellung der österreichischen Zahnärzte zur Frage des zahnärztlichen Studienganges. *Wien zahnärztl. Monatschr., 1901, iii, 472-478.*

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING DECEMBER, 1901.

- Dec. 3.*—No. 687,859, to OSCAR H. SIMPSON. Swaging device.  
 " "—No. 687,987, to FERNANDO O. JAQUES. Dental press.  
 " "—No. 688,088, to GUSTAV HOLTZ. Dental or surgical chair.  
 " "—No. 688,122, to CLAYTON J. REYNOLDS. Dental disk mandrel.  
 " "—No. 688,237, to JOSEPH B. DAVIS. Dental forceps.  
 " *10.*—No. 688,440, to WILLIAM P. SCOTT. Tool for manufacturing tooth-crowns.  
 " "—No. 688,501, to ROBERT BREWSTER. Artificial tooth.  
 " "—No. 688,553, to IVAR E. SIQVELAND. Instrument for filling dental cavities with cement.  
 " "—No. 688,661, to WILLIAM B. MILLER. Porcelain tooth-crown.  
 " *17.*—No. 689,158, to AUGUST BISCHOFF. Fastening for artificial teeth.  
 " "—Reissue. No. 11,956, to CARL H. SEEGER and NICHOLAS DEDRICK. Dental tool.  
 " *24.*—No. 689,589, to WM. G. HULLHORST. Dentist's cabinet.  
 " "—No. 589,596, to SAMUEL W. PLATT. Dental tool.  
 " *37.*—No. 689,940, to GILBERT M. WILLIAMS. Dental finger-guard.  
 " "—No. 690,085, to JOSEPH F. TWIST. Apparatus for forming seamless tooth-crowns.  
 " "—No. 690,224, to HENRY C. BAGBY. Hot-air dental appliance.

THE  
DENTAL COSMOS.

---

VOL. XLIV.

PHILADELPHIA, MARCH, 1902.

No. 3.

---

ORIGINAL COMMUNICATIONS.

WILL NITROUS OXID AND OXYGEN SUPPLANT ETHER AND  
CHLOROFORM IN GENERAL SURGERY AND NITROUS  
OXID ALONE IN DENTAL SURGERY?

BY W. J. ROE, M.D., D.D.S., PHILADELPHIA.

(Read at the annual convention of the Sixth, Seventh, and Eighth District Dental Societies of the State of New York, October 29, 1901.)

**M**ODERN Surgery has steadily progressed, and its technique has been perfected to such a degree that fatal results, directly or indirectly, are happily becoming relatively few. The skill and judgment of the operator, as a consequence, are being more severely scrutinized than ever before. The inevitable and frightful mortality in surgery in pre-anesthetic and -antiseptic days was so great that a probable fatal termination was generally anticipated.

The exalted ambition of surgeons, stimulated by the increasing confidence and respect of the laity, has been to make their art a most beneficent branch of medicine, and to eliminate every possible detrimental factor. The danger incident to the administration of the anesthetic is still frequently of greater concern to the patient, as well as to the operator, than the operation, and both are calling loudly for the elimination of the danger.

Are we to look for this crowning achievement in nitrous oxid, and are we to place upon it this most enviable appellation.—*First, best, and last?*

After a lapse of half a century, it is pleasing to see the hopes of Dr. Horace Wells realized. Can we look upon the modern application of nitrous oxid in general surgery, and then read the record of Dr. Wells's visit to Boston (his former home) in the winter of 1844-45, for the purpose of introducing to the medical profession of Boston and of the world the use of nitrous oxid as an anesthetic in

surgical operations other than the extraction of teeth, and of the ardor, hopes, and ambition of that good man being ruthlessly shattered by the failure of his demonstration,—without wishing that he, the discoverer of modern anesthesia, could come back to us to witness the realization of his hopes!

It is interesting to note, in the study of the evolution of important events, that the suggestion made by Sir Humphry Davy at the close of the eighteenth century should receive practical application in general surgery at the end of the nineteenth.

The universal application of ether and chloroform, since their discovery (ether by W. T. G. Morton in 1846, and chloroform by Sir James Simpson in 1847) has relegated nitrous oxid to dental surgery and prevented the necessary research work to make its use in general surgery practicable. The wide application and the confidence acquired by the profession in ether and chloroform as anesthetic agents necessarily makes the introduction in general practice of any other agent very difficult, unless marked advantages can clearly be demonstrated.

There can be no stronger argument adduced against the employment of chloroform or ether than the numerous attempts by many of the leading members of the profession throughout the world to discover and employ other anesthetic agents. It is needless, and quite impossible, to estimate the value of ether and chloroform, and I do not wish to detract one jot from their enviable records. Yet it is generally recognized that neither is the ideal anesthetic which is so zealously sought for by the profession of to-day.

Henry J. Garrigues (*Medical News*, November 12, 1898) advises the careful consideration of these points in the employment of any anesthetic agent: (1) Safety. (2) Speed. (3) The patient's comfort. (4) Simplicity. (5) Economy.

Successful results of anesthetization are no longer gauged by the patient's condition when leaving the operating table, but the after-effects are closely observed, and many severe and not a few fatal complications are directly attributable to the anesthetic agent.

Since the discovery of the analgesic properties of cocain by Karl Koller, in September, 1884, and its employment soon after as a local anesthetic by Hepburn, Hall, and Halstead, much has been expected and achieved by local anesthetics. Surgeons gladly welcomed this new departure, as it enabled them to perform many minor operations with less of the dangers and objections incident to the employment of a general anesthetic.

A most interesting paper has recently been contributed by Rudolph Matas (*Philadelphia Medical Journal*, November 3, 1900) entitled "Local and Regional Anesthesia with Cocain and other Analgesic Drugs, Including the Subarachnoid Method as Applied in General Surgical Practice." At the time of this publication local anesthesia had about reached its present height, and many surgeons were employing the Corning-Bier method of injecting cocain or eucain into the subarachnoid space in the lumbar region, thus producing regional anesthesia of the trunk and extremities, which was maintained sufficiently long to enable surgeons to perform pro-



longed and extensive operations. Unfortunately, this method also has its disadvantages and objections, and few surgeons continue to use it, depending as before upon ether and chloroform. Matas points out that neuro-regional anesthesia by cocain or eucain, originated in 1884 in the experiments of Hall (who anesthetized the anterior teeth and their region by injecting cocain along the trunk of the infraorbital nerve) and Halstead (who obtained similar results by injecting the inferior dental at the spine of Spix by nine minims of a four per cent. solution of cocain).

Matas also notes that the same results as those obtained by Halstead were obtained by Barrancha, of Santiago, Chile, in 1885.

It is no doubt gratifying to the dental profession to observe that these experiments in connection with the dental organs led to the investigations by Corning and Bier, which resulted in the introduction of cocain and eucain into the subarachnoid space; there it became mixed with cerebro-spinal fluid, and through this medium the roots of the spinal nerve became anesthetized, producing regional anesthesia throughout their distribution.

The disadvantages and dangers resulting from the toxic effects of cocain are reduced to a minimum, or practically rendered *nil*, by the valuable experiments of Schleich, begun in 1888 and published in 1894, demonstrating that regional anesthesia could be produced by very minute quantities of cocain in dilute solutions by his infiltration method. Schleich's labors were augmented by those of Heinze and Reclus.

The discovery of eucain B by Silex in 1897 has largely supplanted the use of cocain in my experience, as its toxic effects are very slight (one-quarter those of cocain), and it is can be employed in liberal quantities. There are a great many other anesthetic agents, with a variety of methods employed in their use. I will only mention a few of the important ones, as the fact of their employment shows that, were it not for the dangers incident to the use of ether and chloroform, they would never have been sought out and utilized:

Ethyl bromid. As a general anesthetic.

Ethyl chlorid (or Kelene). Both as a regional and general anesthetic.

Morphin and cocain.

Nirvanin, discovered by Einhorn and Heinze in 1898. As a regional anesthetic.

Mixtures of ethyl chlorid and cocain; cocain and eucain B; cocain and nirvanin;

Numerous mixtures of the general anesthetic agents:

A. C. E. mixture—Alcohol 1 part, ether 2 parts, chloroform 3 parts.

Alcohol, cocain, and chloroform mixture.

Oxygen as an adjunct with chloroform to lessen its danger.

Chloral or morphin, or both, with chloroform.

Paraldehyd and chloroform.

Schleich's mixtures—1, 2, and 3 of chloroform, petroleum ether, and sulfuric ether.

Matas shows very clearly in his paper a practical point in the production of anesthesia by the infiltration method with which the

dental profession is probably not sufficiently familiar, and although quite far removed from our subject it may be of passing interest.

Schleich, in his study of the sensitivity of the tissues to infiltration by different solutions, found that the nearer the solution approached the composition of plain water the greater was the pain incurred by its introduction, and that a solution of the same specific gravity and of the normal concentration and alkalinity of the body fluids, and of the temperature of the body, did not cause pain when introduced, produced the least traumatism of the tissues, and from it also the tissues recovered most quickly.

More concentrated solutions will draw water from the tissues and cause pain; weaker solutions cause the tissues to swell and are similar in their effects; the nearer they approach pure water the greater the pain. An indifferent fluid iso-osmotic with the blood produces neither pain nor anesthesia. A warm, osmotically and chemically indifferent fluid with a freezing-point of about  $0.55^{\circ}$  C. is the medium which when injected produces no physical effects *per se* and leaves the specific action of the analgesic drug (cocain, eucain, etc.) to act alone. According to Heinze and Braun, such a medium is 0.9 per cent. watery solution of common salt at the body temperature. Heinze (1898) has also determined that within certain limits, from 0.6 per cent. to 2 per cent., the osmotic action of sodium chlorid solutions is so slight that the injection is entirely painless. (Matas, *Phila. Medical Journal*, November 3, 1900.)

Returning to the employment of nitrous oxid in general surgery, or for prolonged anesthesia, my first opportunity for observing the same occurred recently in the clinic of Professor W. W. Keen, when nitrous oxid was administered by S. Ormond Goldan, M.D., of New York. I became, however, specially interested in this about a year previous, when at the request of Dr. Keen I had reviewed the literature on the subject and the apparatus for its administration, with their cost.

Having administered nitrous oxid quite frequently in dental practice during a period of six years, and having in that time given it a number of times for minor surgical operations, such as opening abscesses, incising furuncles and moving ankylosed joints, and being almost daily in the operating room, where ether, and occasionally chloroform, was being administered, I had learned to depend for general anesthesia almost entirely upon ether, and was quite skeptical of the practicability of nitrous oxid for prolonged anesthesia.

It is no longer contended that nitrous oxid produces anesthesia by asphyxia, but it is conceded that when nitrous oxid is given to the exclusion of air or oxygen, asphyxia keeps pace with anesthesia. This was clearly pointed out by Professor Bert in his paper to the French Academy. (See "American System of Dentistry," vol. ii, p. 170.) A few months later, Professor Bert gave the first practical demonstration of prolonged anesthesia by a mixture containing 85 parts of nitrous oxid and 15 parts of oxygen under increased atmospheric pressure. The scientific results of the labors of Professor Bert and Dr. Fontaine practically established the following: (a) The anesthetic properties of nitrous oxid. (b) The quantity required to be taken up by the blood. (c) The fact that it

remained in the blood as a mixture and did not enter into chemical composition, therefore did not alter the blood. (d) That the necessary amount of oxygen or atmospheric air could be administered to maintain proper oxygenation of the blood without interfering with complete anesthesia. (e) That a superabundance of nitrous oxid in the blood had no toxic effect, and that the surgeon could rest assured that the danger of overdosing, as with ether and chloroform, was not to be apprehended.

Modern demonstrations prove the correctness of these views, although they have been frequently assailed. The mechanical difficulties, however, of conducting operations in pneumatic chambers, which were necessary to secure increased atmospheric pressure for the administration of the anesthetic, prevented the universal practical application of the method. To overcome this, much labor and ingenuity were expended.

Frederic W. Hewitt, M.D., of London, England, began in 1886 a series of experiments in order to administer a mixture of nitrous oxid and oxygen in ordinary atmosphere. During a period of eight years he experimented with thirteen different apparatus and as many methods, before securing a satisfactory workable method. He found the greatest difficulty in regulating the percentages of the gases and preventing sudden transitions, which either led to symptoms of asphyxia or returning consciousness. Dr. Hewitt's valuable conclusions, after thirteen years of work, published in the *British Medical Journal* of February 18, 1899, are as follows:

1. When pure nitrous oxid is administered certain phenomena arise which may be regarded as being either phenomena of anesthesia or phenomena of asphyxia.

2. The anesthetic phenomena of nitrous oxid, although apparently different from those of ether or chloroform, are in every essential feature similar.

3. The most conspicuous of the asphyxial phenomena are embarrassed and stertorous breathing, cyanosis, and anoxyemic convulsions. All these may be eliminated without interfering with the anesthetic effects of the gas by administering at the same time pure oxygen or atmospheric air.

4. There are other less obviously asphyxial phenomena; dilatation of the pupils, swelling of the tongue, and rapidity of circulation, which may be modified or prevented by similar means.

5. Pure nitrous oxid causes the breathing to become deep and quick and at the end of about sixty seconds its rhythm becomes altered, either by obstructive stertor, anoxyemic convulsions of the respiratory muscles, or a combination of both conditions; if the administration is pushed far enough the breathing would be arrested in one of these ways; paralytic arrest of respiration is very rare, and when it occurs depends as much upon cerebral phenomena from deficient circulation as upon the presence of non-oxygenated blood.

6. If we add air or oxygen to the gas, deep and obstructive stertor is not met with, and only gentle snoring occurs; if there be 30 per cent. of air or 13 per cent. of oxygen, respiration becomes noiseless.

7. The most marked cyanosis is encountered when from 3 per cent. to 6 per cent. of air, or under 3 per cent. of oxygen is given with nitrous oxid; with pure nitrous oxid cyanosis may not have time to become marked, for the administration may be cut short by deep stertor.

8. Anoxyemic convulsions are apt to be greater with a small percentage of air or oxygen than with pure nitrous oxid, but as the percentage of air or oxygen increases, the convulsions decrease.

9. Reflex movements and movements of excitement are most likely to



arise with pure nitrous oxid or with nitrous oxid with a small percentage of air (3 per cent. to 7 per cent.); or with nitrous oxid with considerable percentages of air (20 per cent. to 30 per cent.); or with oxygen (10 per cent. to 20 per cent.); they are most likely to occur with mixtures containing from 12 per cent. to 16 per cent. of air, or from 3 per cent. to 7 per cent. of oxygen.

10. Phonated sounds are most common when nitrous oxid is administered with a large percentage of air or oxygen.

11. The duration of available anesthesia is longest after the administration of mixtures containing from 3 per cent. to 11 per cent. of oxygen, and the maximum duration is attained with 7 per cent. mixtures; nitrous-oxid-and-air anesthesia gives a longer period than pure nitrous oxid, but the result is always uncertain.

12. The best results are obtained with nitrous oxid and oxygen, the next best with nitrous oxid and air, and the worst with pure nitrous oxid.

13. There is no one mixture of nitrous oxid with air or with oxygen that will successfully anesthetize every patient.

14. In giving nitrous oxid and oxygen we should have a regulating apparatus which permits of the progressive increase of the oxygen from 2 per cent. at the beginning of the administration to 10 per cent., according to circumstances; the longer the administration lasts the greater may be the percentage of oxygen administered.

15. The next best results to those gained by means of the regulating apparatus are secured by the administration of certain constant mixtures; for adult males the best mixtures are those containing from 5 per cent. to 7 per cent. of oxygen; for females and children, those containing from 7 per cent. to 9 per cent. of oxygen.

16. The next best results are to be obtained by mixtures of nitrous oxid and air, from 14 per cent. to 18 per cent.

17. It is clear that satisfactory anesthesia unaccompanied by asphyxial manifestations may be secured by these mixtures at ordinary pressures.

18. This last fact, at first sight, seems to destroy the asphyxial theory of nitrous oxid anesthesia; but we are not justified in assuming that, because no obvious asphyxial manifestations appear, there is no interference with oxidation.

Much attention has also been given to the administration of nitrous oxid preliminary to ether anesthesia or in combination. This was instituted for the following purposes: (a) To lessen the required time for securing ether anesthesia. (b) To avoid the disagreeable subjective sensations experienced by the patient. (c) To lessen the dangers incident to the administration of ether up to surgical anesthesia.

Much valuable work has been done along this line, and many surgeons recommend and employ the same; many methods, too, are recommended. Many of the earlier administrations were conducted by the ordinary gas apparatus for the administration of nitrous oxid alone, and when nitrous oxid anesthesia plus asphyxia was secured, ether was immediately substituted and rapidly administered until ether anesthesia was obtained.

In many cases, partial or complete return to consciousness occurred, and it was found desirable to use the combined method. Thomas L. Bennett, M.D., of New York, describes at some length his combined ether-and-nitrous-oxid apparatus in the *Medical Record* of March 24, 1900,—the result of ten years of careful investigation. He begins by administering nitrous oxid until partial anesthesia is secured, and then combines ether vapor until nitrous oxid anesthesia is complete, when he admits two or three respirations of air, followed by a few more respirations of the combined

nitrous oxid and ether, after which the nitrous oxid is stopped and ether is continued. As a rule he has been able to secure complete anesthesia in from two to five minutes, and usually without struggling or excitement, the patient having no knowledge of ether. This apparatus is equal, in every respect, to the Clover-Hewitt apparatus, which is quite frequently used in England and on the Continent. It is less expensive and more easily repaired.

H. W. Carter, M.D., of New York, in the *Medical Record* of April 14, 1900, in a paper on nitrous oxid and ether anesthesia, administered by means of the Bennett apparatus, gives as his conclusions:

Economy, safety, saving of time to the operator, and elimination of the disagreeable features of ether inhalation. As the quantity of ether inhaled is comparatively small, patients recover more promptly, nausea and vomiting are of much shorter duration, and intestinal after-disturbances are reduced to the minimum.

In ordinary ether administration it often takes more ether to induce narcosis than is afterward required for a long operation. The almost absolute safety of gas, with its pleasantness and rapidity of action, make it a most welcome agent to any patient who is to undergo a surgical operation. Indeed, the small quantity of nitrous oxid actually required is sometimes surprising, one bagful (about two gallons) being sufficient for any case, and I have succeeded in inducing perfect anesthesia, without the least discomfort to the patient, with only half a bag.

The quantity of ether required in ordinary cases is less than one-half, and oftentimes one-third, of that consumed when the open cone is used, a single 250-gm. tin sometimes sufficing for three lengthy operations. In kidney or lung affections in which the condition of the heart forbids the use of chloroform this economy of ether is certainly a very great advantage.

Mr. Sidney Rumboll reported before the London Society of Anesthetists,—and that paper appears in the *British Medical Journal* of February 10, 1900,—the after-effects in fifteen hundred unselected cases of anesthesia produced by the administration of nitrous oxid followed by ether: one of pneumonia, one of bronchitis, and four of trifling bronchial irritation.

A few years ago, The S. S. White Dental Manufacturing Company imported the Hewitt apparatus for the administration of nitrous oxid and oxygen. From valuable suggestions made by Dr. M. H. Cryer and Dr. E. C. Kirk they have placed on the market a modified Hewitt apparatus, and it is gratifying to know that there are at present about two hundred and twenty-five in use,—almost exclusively by the dental profession. Dr. Cryer and others have used this apparatus for prolonged anesthesia in other than dental surgery.

Considerable interest was aroused by the publication of an unprecedented case of prolonged anesthesia, with nitrous oxid and oxygen, by S. Ormond Goldan, M.D., of New York, in the *Medical Record* of March 3, 1900. The patient was a woman, aged seventy-six, from whom Dr. J. H. Boldt extirpated both breasts with axillary contents, the narcosis lasting two hours and forty minutes. Dr. Goldan used the Hewitt apparatus with Barth's arrangement of cylinders, using during the first half of the anesthesia from 6 to 8 per cent. of oxygen, and during the latter part about 10 per cent., no stimulation being necessary and no untoward symptoms de-

veloping. In this patient the nitrous oxid used was fifty-five ounces by weight, 220 gallons by volume; the oxygen was eleven ounces by weight, 60 gallons by volume, making a total cost for the gases used of \$7.40, being two and five cents per gallon respectively.

In the clinic of Jefferson Medical College Hospital, previously referred to, three minor surgical cases had been prepared for operation. The first unfortunately was not a suitable case, being a girl aged four, with a large size nævus involving the greater portion of the left cheek and a part of the left half of the upper lip, making it impossible to apply the hood of the inhaler, as it covered the field of operation. Unfortunately, so far, this method of anesthetizing is not applicable to oral or nasal surgery, or surgery of the immediate vicinity. Although clearly recognizing this, Dr. Goldan tried the drop method by holding the hood of the inhaler as close to the mouth and nose as the operator could permit, allowing the nitrous oxid to escape freely and drop; and although the patient was breathing a mixture of nitrous oxid and atmospheric air, at normal pressure, the operation was accomplished with little difficulty, being interrupted a few times by the patient's crying, but with little or no evidence of pain, sufficient nitrous oxid being taken up by the blood to produce analgesia. Anesthesia was procured in forty-five seconds and continued for eight minutes.

Second case: Female, age eighteen, with several tuberculous lymphatic glands in the left side of the neck about the region of the vessels. Nitrous oxid and oxygen was administered, and anesthesia was accomplished in two minutes and fifteen seconds and continued for thirty-three minutes. The patient recovered consciousness in less than two minutes after the hood was removed. The state of anesthesia was apparently complete during the entire operation, the patient sleeping quietly with no stertor or cyanosis or circulatory disturbance, and without succeeding nausea or vomiting.

Third case: Male, age twenty-six, having an ischio-rectal fistula. Nitrous oxid and oxygen was administered and anesthesia was accomplished in one minute and twenty seconds, when ether was immediately substituted, and five minutes later ether anesthesia was accomplished and continued for ten minutes. There was, however, a partial return to consciousness following the discontinuance of the nitrous oxid and oxygen, and the patient struggled considerably, during which time there was evidence of partial asphyxia. This administration was quite unsatisfactory to me, as I believed the patient could have been anesthetized with ether alone in the same time, and with less discomfort, notwithstanding the fact that he was addicted to the use of alcohol. It demonstrated also the objection to the immediate discontinuance of nitrous oxid upon the substitution of ether.

The same evening, Dr. Goldan read a paper at the College of Physicians, Philadelphia, entitled "Nitrous Oxid and Oxygen as a Surgical Anesthetic; Description of a New Apparatus for Administering these Gases; Report of One Hundred Operations; Narcosis Lasting Half an Hour and Upward." His remarks covered the use of nitrous oxid as a preliminary to ether in general anes-



thesia, and he stated that nitrous oxid and oxygen was a safe anesthetic to which there is no contraindication. He begins by administering nitrous oxid alone, and when about six inhalations are taken he combines with it oxygen. In the discussion which followed the reading of Dr. Goldan's paper, Dr. Thomas R. Brown, of Baltimore, reported a number of cases in which he had used nitrous oxid preliminary to ether anesthesia with very satisfactory results.

Dr. Goldan's apparatus, as described in his paper and demonstrated in the clinic, although possessing certain marked advantages, appeared to me to lack the desired conditions necessary to make it generally acceptable. The cylinders containing nitrous oxid and oxygen were placed on the floor of the operating room, with a slight metal attachment and with a foot-wrench which enabled him to turn the gas on and off as desired. The gas-bags were connected by ordinary tubing and were suspended from the inhaler by a short connection containing the adjuster for the relative quantities of gases inhaled. In addition to occupying the usual position of the anesthetist, he required the region of the right side of the table for his gas-bags. The operation being upon the left side of the neck, the operator's assistant, who in ether or chloroform anesthesia would take his position at the right side of the table, was compelled to stand at the same side of the table as the operator, a marked disadvantage. The suspension of the gas-bags from the inhaler necessarily made its application more difficult, and there was a tendency of the tubing to become displaced. This was largely due to the obstruction to the escape of gas from the cylinder by the accumulation of ice, and when the force would overcome the obstruction, the sudden and excessive escape of gas detached the tubing several times, and burst it once. To prevent the freezing, he frequently applied heat to the yoke attachment by wet cloths.

I have an aversion to the employment of gas-bags, as I have frequently used them both in minor and dental surgery, and much prefer a gasometer. I believe that a properly constructed gasometer, although not possessing portability, would largely eliminate the above mechanical difficulties and could be conveniently employed in hospital practice.

Dr. R. H. Cullum, of St. Paul, Minnesota, has for the past nine years been developing a gasometer for the combined administration. He reported in *Items of Interest* for May, 1900, the results of his work, together with an illustrated description of his gasometer, which he was using very successfully in dental surgery.

L. Coyteux Prevost, M.D., of Ottawa (*Canadian Journal of Medicine and Surgery* for July, 1901) contributes an interesting paper on "Nitrous Oxid and Ether Anesthesia" and gives in tabulated form the results he has obtained with regard to the time required to induce complete anesthesia as compared with ether alone, which shows a marked advantage in favor of the combination. As regards their effect upon the kidneys, he says: "I hasten to say that the quantity of albumin found in my cases has been almost the same after anesthesia by ether alone, or associated with nitrous oxid, the slight difference being in favor of the latter."

His conclusions are: "So far, I consider this mode of anesthetization is absolutely ideal, as much for the rapidity with which the patient becomes anesthetized as for the freedom from all unpleasant sensations during the process of anesthetization, and the diminution of after-symptoms so frequent after operations."

In considering the five conditions required by Garrigues and previously stated herein, to what extent does the administration of nitrous oxid and oxygen comply as compared with ether and chloroform?

1. *Safety.* In a discussion before the London Society of Anesthetists and reported in the *Lancet* of January 7, 1899, it was freely admitted that nitrous oxid was the safest general anesthetic; that ether came next in point of safety, and that chloroform not infrequently proved fatal. This opinion of nitrous oxid is universally conceded, and, when its administration is combined with that of oxygen, it is frankly stated by Goldan and others that they form a safe anesthetic to which there is no contraindication. I believe, therefore, the first and most important consideration is fully met.

2. *Speed.* The time required for anesthesia by nitrous oxid and oxygen being seldom longer than two minutes, and the return to consciousness within two minutes from the time the anesthetic is withdrawn, certainly gives it precedence in this particular.

3. *The patient's comfort.* Again these agents seem to fulfil the requirements to the fullest extent. The rapid loss of consciousness, unattended by asphyxia and with only an occasional slight period of excitation or bronchial irritation; the elimination of the dread of ether or chloroform by the assurance that they are taking a safe anesthetic, the recovery from which is almost immediate when discontinued; and after-effects, as nausea and vomiting, being seldom present and usually slight as compared with ether anesthesia.

4. *Simplicity.* The simplicity of the ordinary administration of ether and chloroform will probably never be achieved by nitrous oxid. However, the more strictly scientific administration of ether and chloroform requires an apparatus to indicate the amount of air and vapor given. I believe much can be done to simplify the present methods for administering nitrous oxid and oxygen and render it practicable, in almost all cases except those already specified.

5. *Economy.* Again, the relative cost of the necessary apparatus and the material used is much greater in nitrous oxid and oxygen than under ether or chloroform, but this in many cases would be more than recovered during convalescence in eliminating the frequent necessity for the administration of oxygen while recovering from ether and chloroform narcosis, the lessened quantity of drugs and special foods required to overcome the contributory shock, nausea, and vomiting; in the lessened need for special nursing, and in shortening the period of convalescence, thereby reducing the expense of hospital service, surgical attention, and nursing.

I am happy to state that I believe there are no hospitals and few patients who would consider, for a moment, the extra expense of this anesthetic, when its safety is considered.

To what extent does the administration of nitrous oxid and oxygen comply as compared with nitrous oxid alone?—

1. *Safety.* The prevention of asphyxia by the combination practically eliminates the only danger.

2. *Speed.* Any variance in the time required for either administration is of little importance, but of great importance is the relative duration of the anesthetic period, which is considered to be longer (probably one-half) with nitrous oxid and oxygen than with nitrous oxid alone; and, in addition, the lessening and frequent absence of stertor and anoxyemic convulsions facilitates greatly the execution of the operation.

3. *The patient's comfort.* The patient's comfort is evidently enhanced both as regards subjective sensations and fear.

4. *Simplicity.* In point of simplicity, the nitrous oxid alone has the advantage, but the additional complication of the administration is not of necessity an argument against it.

5. *Economy.* The slight additional expense is more than com-  
bated by the advantages of increased duration of the anesthetic period and more complete control of the patient.

## ORAL SEPSIS, NECROBIOSIS, ANTISEPSIS, AND PROPHYLAXIS.

BY WM. A. MILLS, D.D.S., BALTIMORE, MD.,

LECTURER ON NITROUS OXID ANESTHESIA, BALTIMORE MEDICAL COLLEGE DENTAL DEPARTMENT; MEMBER OF AMERICAN MEDICAL ASSOCIATION, ETC.

(Read before the Baltimore County Medical Association, January 16, 1902.)

**S**TOMATOLOGISTS\* learned years ago that indigestion, tic douloureux, nervous headache, etc., were cured by the removal of all suppurating teeth and necrosed roots, the insertion of artificial dentures, and instruction how to keep the mouth in a hygienic condition.

After the introduction of antiseptics, the more experienced and progressive practitioners, having a better understanding of cause and effect, treated such cases more intelligently, and were the first to call attention to the fact that septic conditions of the oral cavity were etiologic factors in many diseases of the general system, especially those of the alimentary tract. Dr. W. D. Miller, stomatologist and bacteriologist, Berlin, Germany, said, when bacteriology was in its infancy, that he believed that many micro-organisms found in the mouth, while non-pathogenic in the oral cavity, were capable of playing a very malignant rôle when transferred to distant parts of the body.

Dr. Geo. A. Mills, New York, in 1879, said: "All uncleanly and unhealthy mouths favor disease of the soft as well as the hard tissues, and the result in non-resisting constitutions is deteriora-

\*A stomatologist is one who recognizes the close relationship which lesions of the oral cavity bear to local and constitutional disturbances, and *vice versa*; treats accordingly, prescribing topic, systemic, prosthetic, and other therapia which will relieve or cure disease or its sequelæ.



tion to a greater or less degree. It is not at all uncommon to be able to trace directly to the unhealthy conditions of the mouth and teeth, local diseases, as of the eyes, ears, nasal cavities, or vocal organs; while in not a few cases the mucous membranes are deranged from the lips throughout the alimentary tract. I predict that the time is not far distant when the general practitioner will acknowledge the results of intelligent practice by us in this direction."

Dr. Edward C. Kirk, Philadelphia, Pa., says in a late editorial: "It is clear to all observers that in spite of the close relationship between the dental and medical sciences the general practitioner as a rule does not accord to the mouth a degree of importance proportionate to its bearing upon the maintenance of health. This overlooking of oral disturbances by medical practitioners has been in some cases productive of fatal results."

It has been only a short while since a few progressive physicians and surgeons in Europe and this country investigated the relations of oral sepsis to local and constitutional disturbances, and have rendered the verdict that septic conditions of the mouth are agents heretofore unsuspected, in the production of pathologic conditions far removed from their seat of causation.

Dr. Van Kaczorowski says: "Many micro-organisms found in the oral cavity are the agents in the production of fermentive processes along the line of the intestinal tract, independent of those introduced by food and drink."

Dr. Hunter, London, England, in reply to a paper read before the Royal Medical and Chirurgical Society, goes much deeper into the subject than any of his *confrères*. He says:

"The whole subject of oral sepsis as a cause of disease has been one of special interest to me for many years; and the more I study it the more impressed I am with its importance, and with the extraordinary neglect with which it is treated alike by physicians and surgeons. I have described cases identical with some of those referred to and shown,—a point not even referred to by any, even the most recent, writers on diseases of the stomach,—that not only is the constant swallowing of pus a most potent and prevalent cause of gastric trouble, but that the catarrh set up is not simply irritant but actually infective, and may lead in time to other more permanent effects,—namely, atrophy of gland and chronic gastritis, and in certain cases even to suppurative gastritis. This result is by no means confined to and associated with any one mouth-condition, such as pyorrhea alveolaris. I have to point out that for every case of gastric or other affection traceable to pyorrhea alveolaris, a hundred cases equally well marked are daily to be found associated with other dental and oral conditions of sepsis. . . . In my own experience they include not only pyorrhea alveolaris, but stomatitis and gingivitis of every degree of severity,—erythematosa, pustulosa, ulcerosa, gangrænosa, and indeed every other form of trouble, dental and oral, producible by septic infection.

"The matter is important, not only in relation to gastritis, but in relation to the whole group of infections caused by pus organisms,

—local, for example tonsillitis, glandular swellings, middle-ear suppurations, maxillary abscesses; general, for example ulcerative endocarditis, empyemata, meningitis, nephritis, osteomyelitis, and other septic conditions. I saw recently a patient who for several years suffered periodically from severe nervous attacks, complicated by gastritis and curious rashes, the whole symptom-complex being regarded as gouty manifestations. I was asked to see her in one of her rashes, and found it a typical blotchy septic rash.

"The important fact to be recognized is that one and all of these various conditions are septic in their nature. The cause underlying them is oral sepsis of the most marked character. This sepsis is of a particularly virulent character, for it is connected with disease of bone (that is, of teeth); and a somewhat extensive pathological experience has satisfied me that no pus organisms are so virulent as those grown in connection with necrosing bone. No physician or surgeon would tolerate for a moment that a patient with a foul septic ulcer, say in his forearm, should from time to time apply his lips to the ulcer to clean it. Yet this is, pathologically, precisely what happens in the case of patients with necrosed teeth and stomatitis. Moreover, the swallowing is constant, and goes on for years unheeded both by patient and doctor.

"It is probably impossible to keep pus organisms out of the mouth, just as it is impossible to prevent occasional access of tubercle, typhoid, and other infective organisms. But that fact does not deter us from taking the most exhaustive precautions to keep typhoid contamination out of our water and from getting into our houses; or from initiating,—as is at last happily the case,—measures for preventing access of tubercle bacilli, whether through air or through milk.

"I confess I think it urgent, in the interests of the many sufferers from gastritis, as well as in the interests of those suffering from pyogenic conditions generally, that some similar steps be taken with regard to the mouth,—the chief channel of access, in my judgment, of all pyogenic infections. We may not be able to prevent their access into the mouth any more than we can prevent their adhering to the skin. But knowing as we now do their potential qualities, there is not the slightest reason why the mouth, so easily accessible as it is to local measures, should be made into a perfect hotbed for their development and propagation.

"In relation to the whole group of internal conditions caused by pyogenic organisms, I consider there is a wide field of preventive medicine open by the exercise of oral antisepsis, a field that can be worked in, with the most surprisingly satisfactory results, alike by physician, surgeon, dental surgeon, and patient."

In view of the broad statements made by Dr. Hunter and others, and proven by clinical observations, your attention is called to a system of oral antisepsis and prophylaxis which, after many years of untiring conscientious labor and experimentation, gives promise to be of much value, not only in the prevention of dental caries but for the alleviation and cure of septic, necrotic, necrobiotic conditions of the oral cavity and their reflexes, being especially recom-

mended as primary treatment in *all diseases of the alimentary tract* and other constitutional maladies of pyogenic character of unknown origin. In the beginning the aim was to hold in abeyance the ravages of necrobiosis\*, and it was discovered by its application that in nearly all cases loosened teeth became fixed, the gums adhered closely to the roots of the teeth, and to all appearances the dyscrasia was cured,† and dental caries inhibited.‡ In addition, such coexisting or reflex lesions as anemia, neurasthenia, gastritis, tonsillitis, pharyngitis, eye disturbances, bronchial irritations, gout, rheumatism, etc., were more or less relieved and many cured. Some patients failed to carry out instructions for home treatment, and were only temporarily benefited; many of them were afterward impressed with the importance of having as nearly as possible an absolutely clean mouth, as the only means of preserving the teeth and health, readily obeyed, and when they realized the greatly improved conditions their thanks were very profuse for advice given and services rendered. The efficiency of the treatment can be verified by anyone who will conscientiously use it, and watch the rapidly changing unhealthy conditions for those of normal physiologic functions.

Office treatment begins with the disinfection of the oral cavity with dioxogen, full strength; the extraction of all diseased teeth and roots which will not respond to medication or cannot be made healthy and useful. All decalcified tooth-substance is removed and the cavities filled; old fillings, gold crowns and bridges are cleaned and polished, and when found not to be constructed upon hygienic principles are removed and repaired, or condemned. Every tooth is given individual treatment, beginning with the removal of all hemato-calcic and pyalo-calcic deposits; after which a tapered hickory-wood stick and wheel brushes charged with full strength dioxogen and *pulverized* pumice-stone is rubbed and brushed on all its surface, going close up to the festooning of the gums, and up and down as far as possible on the roots covered by detached tissues. Rubber bands with pulverized pumice-stone and full strength dioxogen are used for cleaning and polishing the approximal surfaces when they cannot otherwise be reached.§ All necrobiotic pockets are thoroughly syringed with full strength dioxogen and afterward with full strength glyco-thymolin (medical). The tongue is held with a napkin between the thumb and finger,

---

\*A term first applied by Dr. Mitchell, of Pittsburg, Pa., to a pathologic condition now designated by the name of pyorrhea alveolaris. A more descriptive term would be necrobiosis alveoli.

†It must not be assumed that when a cure is claimed that the lost alveolar tissues resume their normal outline or contour. Such is never the case, but while the teeth appear elongated, due to the contraction of the gums over the wasted alveolar tissues, the teeth are very clean, translucent, firmly set, and the gums healthy.

‡Immunity from dental caries, in the majority of cases, is only possible by constant personal hygienic attention and professional supervision.

§This procedure removes the innumerable micro-organisms, etc., found clinging to the cervical borders, dental interstices, and other surfaces of the teeth, which form the "gelatinous microbe plaque," so named by Dr. Leon Williams, its discoverer.



drawn forward and the dorsum scrubbed with a brush charged with full strength glyco-thymolin (medical), and scraped from base to tip. This is followed by massaging the gums with the finger for several minutes, finishing the treatment by patient rinsing the mouth with the following:

R.—*Olei menthæ piperitæ*,  
*Olei ligni cedrei rubri\**, āā. ʒj;  
*Formalini* (40 per cent. sol.), ʒjss;  
*Olei gaultheriæ*,  
*Glycerini*,  
*Tinct. myrrhæ*, āā. ʒj;  
*Spiritus rectificatus*, q. s. ad Oj.  
*Misce dig. et filt.*

Sig.—A few drops in glass of water to make mouth-wash.†

Some cases require many treatments in as many weeks before they can be dismissed to care for themselves; all are requested to visit the office every two months for examination, and treatment if necessary.‡ If the number of teeth lost is sufficient to cause faulty mastication or insalivation, they are peremptorily ordered to have substitutes inserted to take their place. They are advised of the great importance of keeping the bowels in normal activity, using when occasion arises such purgatives as they have been accustomed to taking.

No systemic treatment is prescribed, except when septic conditions are assumed to have caused local or constitutional disturbances, when such remedies as the following are used: predigested foods, malt and the hypophosphites, for relief of the stomach and tissue-building; phosphate of soda, and calomel, for liver and blood; quinin, iron, asafetida, and strychnin as common tonics. The following advice is recommended as additional aids to oral and general prophylaxis: Never eat or drink in the morning before cleansing the oral cavity; a glass of water just before breakfast should be drunk to wash away the mucous coating of the stomach formed during the night; this will leave the stomach clean and prepared to digest food. In cases of gastric disturbance, a few drops of strong peppermint-water, or any other suitable antiseptic added to a warm draught will prove not only refreshing, but will act as a stomachal disinfectant,—preventing fermentation, the formation of gases, and septic conditions. To prevent "tissue drought," drink as much water as possible during the day; this will give sufficient liquid for the secretory glands to form their special juices, and at the same time the excretory organs enough fluid to carry off the waste products of oxidation. When douching the nasal cavities, never cough or blow the nose for five minutes afterward, otherwise some of the liquid may be forced into the Eustach-

\*Oil of red cedar wood, not white cedar wood.

†This formula is used in the office for all mouth-rinsing during and after operations; from it can be made many quarts of pleasant antiseptic mouth-wash.

‡This refers only to necrobiotic cases. Formerly, acting upon the theory that the condition was caused by a uric acid diathesis, many anti-lithic remedies were tried, and while they gave some relief, in a short while the stomach became so rebellious they had to be abandoned.

ian tubes, and serious ear troubles follow. In rinsing the mouth, use the cheek muscles as a bellows and force the liquid between the teeth. Tooth-brushes are not to be used upon gum tissue, as they force the festooning from the normal position, causing pseudo-marginal ridges which form receptacles for fermentation and its consequences; but the teeth should be brushed crosswise with a rotary motion, up and down their surfaces, on a line with their roots. Toothpicks should not be used except in cases of emergency, and then only quill picks, as they irritate the sensitive tissues of the interdental spaces, and are often the first agents in the starting of necrobiosis. Chew as much food as possible which requires hard grinding; it will stimulate the hard and soft tissues and salivary glands to healthy activity. Mouth-breathers are warned to keep their mouths shut, and let the act of respiration be through the nose. Never kiss on the lips one whose mouth and teeth appear to be unclean; when lips are chapped or cracked, never kiss at all, otherwise reinfection may take place, or perhaps constitutional disease may be contracted. The armamentarium for home treatment consists of the following: A good quality, small sized, soft tooth-brush, with bristles cut crosswise like saw teeth, a box of small rubber bands and floss silk, a bottle of dioxogen, a bottle of glyco-thymolin (medical) and a box of tooth-powder made from the following formula:\*

R—Calci carbonas præcipitatus, ʒj;  
Saponis Hispani albi pulvis, ʒiij;  
Magnesii carbonas pulvis,  
Potassii chloras pulvis,  
Acidi boraci pulvis,  
Myrrhæ pulvis, āā. ʒj;  
Saccharini (chemic.) gr. j;  
Olei gaultheriæ, ʒss;  
Carmini, q. s.

Misce et ft. pulvis. (Optato saccharini et carmini.)†

Sig.—Tooth-powder.

In cases of flaccid and bleeding gums the following is added:

R—Aci i tannici,  
Mentholi, āā. gr. v;  
Tincturæ myrrhæ,  
Glycerini, āā. ʒss;

Misce et ft. sol.

Sig.—Apply on pledget of cotton to the gums.

Home treatment begins with the morning toilet by rinsing the mouth, gargling or spraying the throat with dioxogen one part to water nine parts, then scrubbing the tongue with brush or linen cloth charged with glyco-thymolin (medical) full strength, fol-

\*A proper tooth-powder is free from any fermentive ingredients, is anti-septic, deodorant, stimulating, and sufficiently abrasive to keep the teeth polished and free from stains, or conglomerate accumulations on their surfaces. Liquid dentifrices are useless as tooth-cleaners, and when they, or tooth-powders, contain soap-bark (*Quillaia*) they are an abomination, as it is not only an irritant to the mucous membranes but is a decided poison.

†The first four ingredients and the oil of gaultheria are standards; to these may be added others when special cases require them, it being better in all cases to prescribe for each individual, applying the remedies which best serve the observed conditions.

lowed by massaging the gums inside of cheeks and lips, and finishing with rubber bands or floss silk. Treatment after meals: Rinse mouth with water and use rubber bands to remove food débris; use tooth-powder when convenient. Before retiring, use tooth-powder and rubber bands, massage the gums inside of cheeks and lips, after which use glyco-thymolin (medical) one part to three of water, as mouth-wash, gargle, spray, or douche for the nasal cavities.

The myrrh mixture is to be applied directly to the gums on a pledget of cotton, when they are soft or spongy and bleed on pressure; when they become firm and the hemorrhagic condition ceases, this remedy must be discontinued.

When artificial teeth on plates are used, they must be scrubbed with brush and genuine Castile soap and placed in a mixture of one part dioxogen to three of water and allowed to remain while the natural teeth are being cleansed, etc. Rubber bands, floss silk, toothpicks, and tooth-brush must be treated with the same solution.

When plates are made of heavy vulcanite or metal, they must be boiled every two weeks, and when convenient, should be left out of the mouth all night, to rest the mucous membranes, that they may not be impeded in their process of exudation, otherwise xerostomy, or "dry mouth" may develop, with all its evil consequences. If they cannot remain out of the mouth during the night, they *must* be left out during the day.

Your attention might be called to many points of interest in treatment and instructions outlined, as inducing antisepsis and prophylaxis; but time will not permit, except to say in conclusion: It having been proven that the majority of micro-organisms found in the mouth are of a pyogenic character, the day is now past when diseased conditions of the oral and nasal cavities can be ignored, as having no relation to local and constitutional disturbances; therefore practitioners of all specialties of medicine should bear in mind the correlation of the mouth and contiguous structures to other parts of the human organism, and in order to form an intelligent diagnosis of dyscrasias of unknown origin should make an examination of the oral cavity and its associated parts. It is a duty due to themselves and to their patients.

---

## CONSERVATIVE TREATMENT IN ORTHODONTIA.

BY HERBERT A. PULLEN, D.M.D., BUFFALO, N. Y.

(Read at the annual convention of the Sixth, Seventh, and Eighth District Dental Societies of the State of New York, October 29, 1901.)

**P**ROBABLY most of the profession present have read the papers of the American Society of Orthodontists, published in the October *Items of Interest*, and have noted that the subject of Orthodontia has been treated from a comparatively new standpoint, viz, OCCLUSION AS THE BASIS OF THE SCIENCE.

The enthusiasm born of confidence in a basic principle of operation which never fails to produce results anticipated is in evidence



in all of these essays, and if I can succeed in this short paper in arousing a little enthusiasm in this much-neglected science by the illustration of a few cases from practice, selected with the view of ideal treatment and its reverse, I shall feel more than repaid for my efforts.

Too much credit cannot be given to Dr. Angle for his work in this science, for he has not only given the profession a scientific basis from which to diagnose malocclusion, but also a classification of malocclusion so unique that it is only necessary to diagnose a case as belonging to a certain class, when the treatment as well as the appliance to be used is at once indicated. In other words, orthodontia has been placed upon a scientific basis,—which is so important from a practical point of view that it marks the greatest advance in the history of the science.

A reiteration of certain of these principles, without any attempt at originality, will serve to enhance the particular phase of the subject which I have chosen to elaborate in this essay, viz, "Conservative Treatment in Orthodontia."

With normal occlusion as a basis from which to observe the abnormal, appliance-making can be relegated to a secondary place, since the importance of diagnosis and its relation to treatment entitles the latter to a primary position in the management of any case of malocclusion.

Although the construction of appliances should be a secondary consideration, I do not wish to be understood as depreciating the value of the fine mechanical ability necessary to be able to manufacture the most complicated mechanisms; rather would I say that the operator who possesses such a talent, whether inherited or acquired, increases his efficiency in this science many-fold.

Past methods seem to have had no scientific basis from which to diagnose malocclusion. Since normal occlusion has been used as a basis of the science of orthodontia, diagnosis and treatment have been greatly simplified and progress has been inevitable and rapid.

In order not to confuse your minds and more thoroughly to impress the importance of more primary considerations, I have purposely omitted all but a brief mention of appliances and their construction, and will endeavor to give a concise description, illustrated by cases from practice, of a class of cases which occur most often in our practice, and which statistics show occur in 692 cases in 1000 that present, my object being to show that a correct diagnosis and treatment in these cases precludes extraction in over 95 per cent. of them, and consequently tends to the conservation of the dental organs, the restoration of occlusion, the preservation of normal facial lines, and thus to ideal practice in orthodontia.

The class of cases to which I refer belong to class I (Angle) and are represented with the arches in normal mesio-distal relation, with the irregularity confined to the anterior teeth.

First, however, it may be well to note briefly some of the most important points in connection with normal occlusion, a knowledge of which is necessary before one can diagnose even the simplest case of malocclusion.

1st. One arch conforms in size to the other, and is dependent on the other for its integrity and regularity.

2d. Each occlusal plane of each cusp of each tooth in one arch has its counterpart or antagonist in the other arch.

3d. Each of the teeth in both arches has two antagonists or supports in the opposite arch, except the lower central and upper third molar.

4th. The shapes of the teeth, the length of the cusps, the curves of the arches, the proximate contact, the depth of the overbite, the interdigitation of the cusps of the teeth, and the inclined planes of the cusps, all serve the purpose of giving the greatest possible support in all directions to both arches.

The forces which preserve this normal occlusion are:

- (1) The interdigitation of the cusps of the teeth.
- (2) The reaction and dependence of one arch upon the other.
- (3) The muscular influence labially, buccally, and lingually of the lips, cheeks, and tongue.

It will be noted that these forces operate just as powerfully in malocclusion, and effectually maintain any inharmony in the relation of the arches when once established.

One other point which I wish to impress is the importance of the lower arch: "As the teeth of the lower arch erupt before those of the upper, and assume a fixed position before their antagonists appear, it is true that the upper arch is molded over or conformed to the lower in its development, thus making it the more important, rather than the upper, as has heretofore been taught." Hence the necessity for obtaining the lower cast, to note the occlusion of the two arches in malocclusion, is manifest.

So important a factor is the lower arch that it is impracticable and almost impossible to diagnose a case of malocclusion without it. If the lower arch for any reason is contracted and the teeth crowded, the upper arch will be found to be contracted also. The overlapping of a single incisor or canine in the lower arch will cause a diminution in the size of the upper arch to just the extent of the overlapping.

And now, having these points in mind, we will proceed with the diagnosis and treatment of a case of a child eleven years of age belonging to the class referred to, the models before and after treatment being represented from a labio-buccal view in Fig. 1.

The method of diagnosis in these cases is very simple, provided one is acquainted with the exact positions of each inclined plane of the cusps in normal occlusion. It is seen that the mesio-buccal cusp of the upper first molar occludes in the groove between the mesio- and disto-buccal cusps of the lower first molar on both sides (although the right side is not shown) and consequently proves the normal mesio-distal relations of the arches.

The irregularity, then, is confined to the teeth anterior to the first molars, and is shown in the lower and upper arches being contracted anteriorly with crowding of the teeth. In this case the conformity of the upper arch to the crowded lower has resulted in its own irregularity. The cast of the lower arch, occlusal view,

represented on the left of Fig. 2 shows the contraction and crowding better than the buccal view.

As the mesio-distal relations of the lateral halves of the dental arches are normal in this class, it follows that if each arch be enlarged to its normal size, and the teeth moved into harmony with their lines of occlusion, each arch must conform to the other, and

FIG. 1.

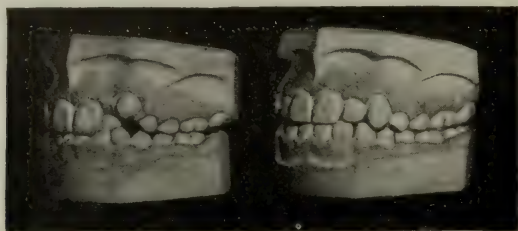


FIG. 2.

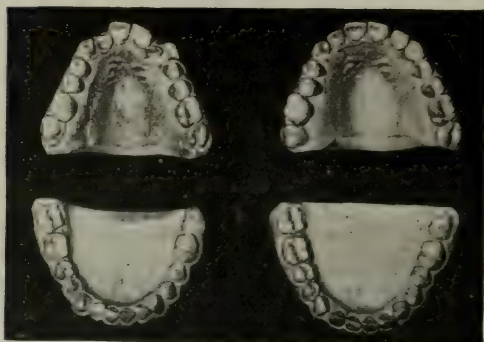
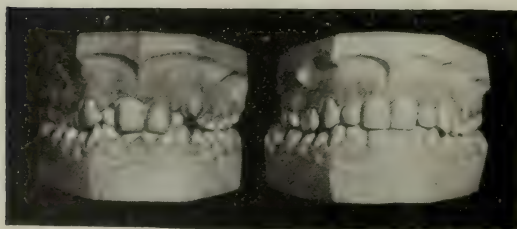


FIG. 3.



normal occlusion be established. Such was the procedure in this case, and the result you have before you in the photographs of the models on the right of Figs. 1, 2, and 3, representing the buccal, occlusal, and labial views of the case; the models on the left exhibiting the case before treatment.

Extraction was not even thought of in this case, nor is it neces-

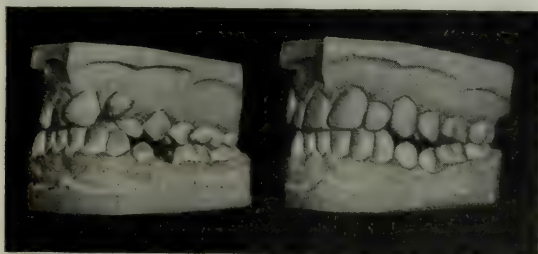


sary in any similar case. In some cases of this class it will seem almost impossible to obtain this result without extraction, but by continuing the conservative treatment after extraction apparently seems inevitable, success will finally crown one's efforts.

Although the establishment of normal occlusion should be the result in the great majority of cases belonging to this class, it is possible only with the full complement of teeth.

There are cases, though very rare, in which extraction is necessary. "Aside from supernumeraries . . . there are but two reasons for extraction in this class. First, where the jaws are so small, either naturally, or because of arrested development, that the angles of inclination would be too great if all of the teeth placed in line. Second, where extraction is necessary from the requirements of the facial lines, for although the arches may be normal in size and development, so as to afford room for all of the teeth, yet the restoration of normal occlusion might produce too great dental or labial prominence, and the facial result be more unpleasing than the original irregularity. It is always possible to treat these cases ac-

FIG. 4



cording to the conservative method until a certainty of an unpleasing result shall become apparent, when extraction can be resorted to without any harm having come from following the conservative method first. Oftentimes the first apparent necessity will disappear as treatment progresses."

In order to emphasize the importance of this diagnosis and treatment, I will show you a case in which extraction was wrongly resorted to with very unpleasing results.

Figs. 4 and 5, buccal and occlusal views, illustrate the baneful results of extraction, resorted to in this case because of an incorrect diagnosis and treatment.

It will be observed that the importance of the lower arch was not recognized, as is shown by its non-treatment, it being contracted anteriorly, but not enough so for the operator to consider it worth while to treat it. The upper arch was expanded, and treatment followed according to the conservative method until it was seen that the upper arch was becoming larger than the lower, when, instead of enlarging the lower arch to harmonize the condition, the second bicuspid on the left side of the upper arch was extracted, and an attempt made to harmonize the upper to the lower with the unfortunate and unsightly,—yes, I may say criminal result shown

in the photographs. They tell their own story more graphically than I can describe it. Note the inharmony in size of the arches, the tipping of the teeth, and the destruction of the occlusion.

The models in Figs. 6 and 7, labio-buccal and occlusal views, represent the ideal treatment from a correct diagnosis, and illustrate a case of this class in which the lower arch is the more irregular. Note the enlargement of the arches to normal, the restoration of normal occlusion, with the conservation of every tooth.

FIG. 5.

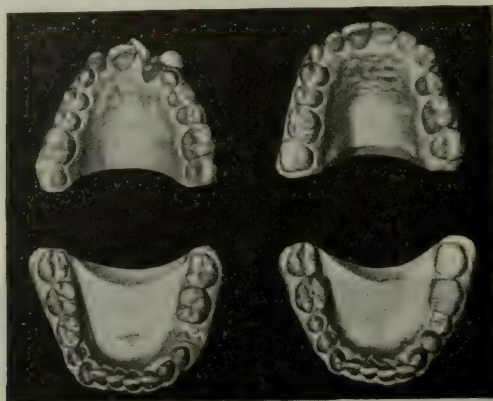
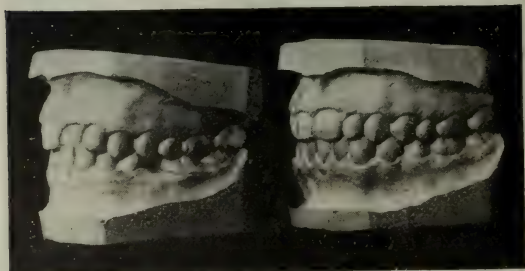


FIG. 6.



Of course there are a few cases of this class in which extraction is advisable on account of reasons stated before, and the choice of the tooth to be extracted is with some operators a matter of convenience only, but with the idea of securing the best occlusion and facial harmony as a guide, such mistakes as the extraction of a canine, lateral, or first molar in any case will be out of the question. To extract the first molar, even though carious, could not benefit the crowded condition of the incisors, and other forms of malocclusion would probably follow. To extract the lateral or canine would seriously mar the appearance of the front of the arch, and is inexcusable. Extraction of the first bicuspid from one of the lateral halves of each arch is usually the plan preferred, on account of facilitating the treatment.

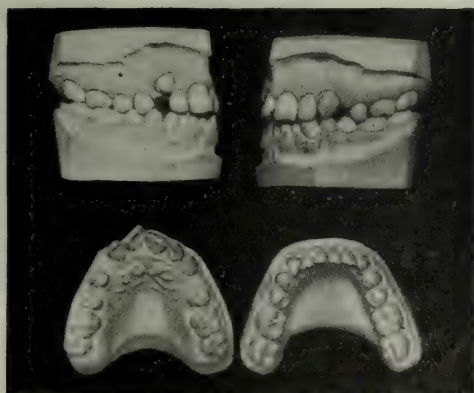
In this class the removal of one tooth necessitates the removal of the corresponding tooth in the upper arch, to avoid an otherwise resultant inharmony in the sizes of the two arches with the consequent ill effects.

But, as extraction in this class is the exception rather than the rule, I will not dwell further on this phase of the subject except a

FIG. 7.



FIG. 8.



brief mention of some of the mistakes made in extraction, and their effects on the arches.

The next model, Fig. 8, is a case of this class, from which the dentist extracted the first upper bicuspid on the left side to secure space for the canine, which was erupting outside of the arch, with the result, as seen, of an ugly space immediately behind the canine, which to my mind is not preferable to the canine in labial occlusion and the full complement of teeth. The case is exactly similar



to the preceding ones, and would have been amenable to treatment in a precisely similar manner.

Fig. 9 shows the evil result of extraction of the lower first permanent molar, and the deciduous canine, the permanent canine being in labial occlusion with no space at all for it in the arch. The ignorance of the first principles of normal occlusion is well evidenced in this model.

FIG. 9.

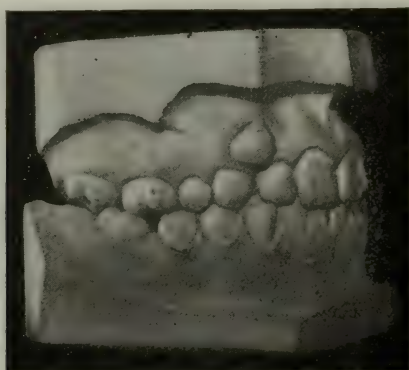
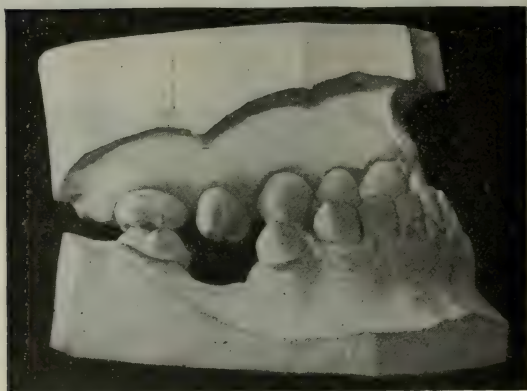


FIG. 10.



The next photograph, Fig. 10, represents the results of criminal extraction in a wholesale way. The resulting facial deformity is easily imagined, and I am sorry that I have not a photograph of the person to show you, but there is a sunken-in expression about the mouth and an apparent protrusion of the lower arch which is very unsightly.

The model illustrated in Fig. 11 is unique, in that all the deciduous teeth have been extracted prematurely, leaving the arches undeveloped, so that it is safe to predict a very serious irregularity in a few months.

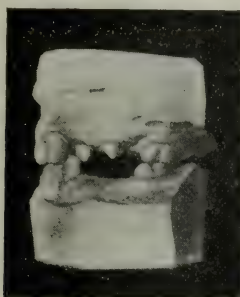
I would like to hear the merits of such wholesale extraction discussed, if there is any one here who believes in such treatment.

Surely the preponderance of clinical evidence of the criminal treatment pursued in treating cases in this manner will outweigh any possible theory upon which such treatment was based.

One of the most important functions of the deciduous teeth is the assistance in a mechanical way in the development of the alveolar process and enlargement of the arches through a preservation of the integrity of the arch of the deciduous teeth until the period of their normal loss and replacement by the permanent teeth: "The mechanical influence of the deciduous teeth in developing the dental arches is so important that they should not only be by all means retained for their normal period, but if they become affected by caries their full mesio-distal diameters should be restored by fillings after separation. Also, if a deciduous tooth be lost through the premature absorption of its root, the full space occupied by it should be maintained by suitable retaining device."

This same mechanical influence in the development of the dental arches and promotion of harmony of facial lines applies equally well to the permanent teeth up to the period of their full eruption.

FIG. II.



Extraction in either deciduous or permanent set destroys the wedging influence exerted by each tooth, and consequently there will be no carrying forward of the teeth and process, thus creating all the evil results arising from unequal development of the two arches.

The most important tooth to preserve is the first permanent molar, especially the lower,—yet its extraction because of caries seems to be a favorite and all too frequent practice. Its loss is followed by more serious results than that of any other tooth.

Much has been written concerning the advantages of extraction of the four first permanent molars about the ninth to the twelfth year in order to prevent developing malocclusion of the teeth, but I have yet to see the case where that has been the result. Instead, I would reverse the statement, and say that this procedure would cause malocclusion; in addition, also, a marked inharmony of the facial lines, and faulty mastication. The first four molars are the foundations for the developing arches, both as to lateral and forward development as well as preserving the proper relation and distance between the two arches until the remaining permanent teeth

have erupted and have been guided into a position confirming the occlusion already established by these four bulwarks of the dental arches.

It seems strange and a little inconsistent that so large a percentage of irregularities of the teeth are caused by the ignorance or carelessness of those whose special training and life-work is the conservation of the dental organs, and I look forward to the day when the graduate dentist will have been so well instructed in the principles of normal occlusion, the forces operating to preserve it, and to cause and preserve a malocclusion when their influence is perverted, that extraction will be to him almost as unknown as the idea of conservation is at present to the great majority of the dental profession, thus marking for the science of orthodontia a new era in which conservation will be the keynote of progress and the beacon light to guide us from many dangerous and criminal practices such as I have enumerated.

---

## PROFESSIONAL EDUCATION IN AMERICA AND EUROPE.

BY W. C. BARRETT, M.D., D.D.S., LL.D., BUFFALO, N. Y.

(Read at the seventh annual session Northeastern Dental Association, Springfield, Mass., October 31, 1901.)

**S**TRICTLY speaking, there can be but three great professions,—Law, Medicine, and Divinity,—which are entitled to consideration on the score of antiquity and beneficence, for in the ancient acceptation of the term a profession implied entire self-abnegation, and that services rendered should be from philanthropic motives alone. When given in the hope of fee or reward they belonged to a business avocation or employment. The origin of this sentiment, which is yet cherished as a tradition in much of Europe, was in the medieval age, when the feudal lord was obliged to look after the bodily health, the spiritual welfare, and the communal interests of his vassals in return for the feudal service which they rendered him. The progress, elevation, and advancement of modern times have brought as a necessary concomitant great modifications. The feudal system with its class privileges has passed away, and the practitioners of the three mother professions are now permitted to accept payment for their services without loss of professional tone.

With the modern development of human knowledge, each of these professions has become divided into specialties or departments, because of the inability of one man to acquire all the literature and lore of each separate branch. Especially is this true in medicine, and accordingly there exist the departments of surgery, ophthalmology, gynecology, etc. Each of these is strictly a department of the great mother profession, and is practiced under the authority of the regular degree and license. But dental practice and dental education, while they were originally an integral part of medicine, have by the force of circumstances been placed in an anomalous position. This was perhaps unavoid-



able under the conditions which prevailed when first the attempt was made to organize into a recognized specialty the heterogeneous elements that existed as dentistry previous to the year 1835. We are fond of claiming great antiquity for our profession, but let me now remind you that before the founding of the first school of dentistry in 1839, whatever was done for the relief of oral disease or deformity either constituted a part of medical practice, as among the Egyptians and other remote nations, or was mere empiricism, without system or recognized method. Unlike the organization of a recognized and established medical practice, which is the result of two thousand years of steady growth and comparatively unintermitted advancement, dentistry as a systematized practice sprang into an organized existence suddenly, through the divorcing of as much as had been incorporated into medical practice and wedding it to a methodized system of applied mechanics. This was the great work accomplished by Chapin A. Harris and his compeers, during the third and fourth decades of the last century.

Their first plan of organization contemplated dentistry as a distinct department of medicine, like ophthalmology, which has its medical, and, to a certain extent, its mechanical aspects. Had this method of systemization proven practicable, it is not improbable that our practice to-day would have been divided in like manner, the medical part being pursued under a medical diploma, while the mechanical department would have been conducted without a distinctive degree or college course of study. Diseases of the eye under this system fall within the province of the ophthalmologist, who is a regular graduated physician and who is the eye surgeon, while the fitting of artificial aids and substitutes is relegated to the oculist, who works under the direction of the ophthalmologist, and who is not necessarily a professional man.

Through the refusal of medicine to co-operate in this form of organization of dentistry, those who conducted the movement were thrown upon their own resources, and separate schools for the teaching in both the medical and the mechanical departments were perforce established. From this act sprang two results which mark the distinctive and characteristic features of the American system of dental professional education. The first, the establishing of a separate and distinctive degree, and the other of segregated and independent schools, having no state or professional responsibility, but organized as mere business ventures and likely to be conducted with an eye single to pecuniary profits. Whatever may be individual opinion concerning the first, there is no question but that the latter is fraught with great possible mischief. Instruction in morals and religion and the training of the young demand for the protection of their purity rigid accountability to some competent and disinterested authority. Professional training ought for its proper regulation to be under professional surveillance, but this should be general, and at the hands of those who are not only professionally competent, but

who possess the confidence of all and are quite disinterested. If, however, this was an unavoidable error at the outset, it is one that is gradually correcting itself through the increasing connection of our schools with universities having general responsibility, inter-collegiate affiliation, and senate supervision.

It is certain that if this method of organization of the profession and the establishment of a definite curriculum of study through the formation of separate and independent schools has its possible disadvantages and imperfections, it also presents definite points of superiority. It permits the teaching of all the branches of dentistry, didactic and clinical, theoretical, practical, and mechanical, in the same course and by a faculty that is a unit, thus giving to each branch its proper proportion of time and attention. Prosthesis is made a definite part of the curriculum, its study is pursued with other branches, and thus their mutual interdependence is provided for. The student is so instructed that he will not practice either to the exclusion of the other, but will be conservative instead of radical.

Our independent schools have necessarily had nothing upon which to depend for maintenance save the fees of students. In the past this has at times resulted in the admission of men who were deficient in preliminary education, and the graduation of some who were disgracefully illiterate. But almost universally they were possessed of great mechanical ingenuity and constructive ability. Some of those who have attained to eminence as operators were lamentably deficient in literary acquirements. The dentists of America have devoted themselves mainly to the practical side of their profession, and there has not always been the universal respect for erudition that is desirable.

Within the past few years there has been a great advance in the general educational attainments of our students. This has been exclusively through the action of the schools themselves. Whereas but a few years ago there was no compulsory standard of preliminary knowledge, the colleges have of their own volition established one which is being raised year by year as fast as is practicable or wise. But in accomplishing this, great obstacles, inherent to our form of government, have been encountered. Each of our nearly fifty separate states is autonomous in everything pertaining to the regulation of its schools. The standards in no two of them are identical, and too often they are contradictory. No line of equivalents could be drawn, because there was none that was common to all the states. But something that was as nearly universal as possible must be established, even though it might at first be ridiculously insufficient, and that of the completion of a common or grammar school course was primarily enacted. Then an attempt to introduce a modification of the system established by law in the state of New York was made. This proved a failure through its complexity and the difficulty of its comprehension. The legislation establishing it was repealed, and the enemies of the schools at once raised the cry that college men were for selfish reasons opposed to any preliminary educational

standard. But the next year a high school or academic test was made the standard, one year of such work being established as the minimum. A year ago another advance was made, and beginning with the next course, two years of high-school work will be demanded for matriculation. This is the equivalent for the English standard, which the regents of the state of New York rates as equal to two years of New York high-school work. In due time this will be further advanced, until the standard of a liberal high-school education is reached. But the embarrassment continues, due to the lack of uniformity in the high-school standards in the different states, two years of that of New York being equal to four years of that of some states, because the standard of admission is higher. In Canada, for instance, students are received in the high schools after a course of six years of preliminary or common-school study, while in New York eight years is demanded. Time will, however, bring the various systems nearer together.

Nor is it alone in the preliminary requirements demanded that the rate of advancement has been such as to astonish even ourselves. The time is easily within the recollection of middle-aged dentists when the college course, even nominally, covered but two years of five months each. Students were permitted to enter late and to leave early, while five years of practice or preceptorship was accepted as the equivalent for one of these years, so that a very large proportion of those who graduated previous to 1885 did so after about four months of real college work. With the organization of the National Association of Dental Faculties a new era was opened. First the term was extended to six months and each college was made responsible to all the others for its every act. Then the course was extended to three years, and but twenty days were allowed after the date of opening in which to join the classes. After a brief respite to enable the schools to adapt themselves to the new conditions the time of each course was extended to seven months, and but ten days allowed in which to join the classes. At the same time the regulations permitting the abridging of the course under various pretexts were so changed as to forbid the giving of advanced standing for anything but graduation from an accepted medical college. Another brief interval and the course was extended to four full years of not less than seven months each.

Coincident with this lengthening of the course has been the broadening of the curriculum, until it covers all the studies embraced in a thorough scientific course. Independently of the greatly extended instruction in anatomy, chemistry, physiology, materia medica, and operative and prosthetic dentistry, there have been added courses in pathology, bacteriology, histology, biology, comparative anatomy, hygiene, orthodontia, embryology, metallurgy, operative and prosthetic technics, crown and bridge-work, porcelain work, oral surgery, jurisprudence, ethics, and many other allied branches, and the assistance of teachers trained for their work has become essential. While no



one conceives that we are near the end of our growth, the advance is something phenomenal, notwithstanding the plaints of a few pessimists possessed of more zeal than knowledge, who seem to think it possible to grow a ten-year-old tree in a day.

It may thus be seen that the work of professional education and organization has for the past twenty years made rapid and continuous progress in America. Indeed, there has even been danger of too precipitate action, in the raising of the requirements faster than the general tone of the profession and the comprehension of the people would warrant. For two or three years the antagonism of some of the state dental examining boards, and their determination to dominate and control the colleges, together with a lack of comprehension of the real status, neutralized everything that was attempted, and even brought about retrogressive steps, but upon the whole the advancement has been much greater than could reasonably have been anticipated, and the future of dental education in America is full of the brightest promise.

Let me now as briefly as possible sketch the progress of dental education and organization in Europe, and compare it with our own. Americans have always been a practical, ingenious people, who have usually sought the shortest route to the end desired. The fact of their territorial segregation from other nations, the necessity for subduing a wild country and out of the primeval forest and prairie to elaborate a civilization of their own, has made them in some respects different from other nations, which have through many generations inherited their training and habits and methods from their ancestors. The very conditions under which our national character has been formed have proved an apt soil in which to grow that peculiar manual dexterity demanded in dental practice, and with the dawning of an organized profession there sprang up a class of men who soon became the most skillful operators or fillers of teeth that the world had ever seen. But they were too often lacking in the mental discipline which is obtained chiefly from an extended scholastic course. Dental professional schools were first established in America, and the building up of a proper curriculum of study was naturally influenced by the peculiar conditions in existence. It was experimental, for there were no old traditions to serve as landmarks.

The situation was far different in Europe. There old precedents held undisputed sway, and when twenty years after the first American dental college was founded there was established the first dental hospital of London, which afterward grew into a dental school, it was to be expected that it would be organized in accordance with the crystallized theories of the old world. Instead of at least partially divorcing dental teaching from that of medicine, it was sought to make it an integral part of it. As in England medicine was taught in so-called "hospitals," dental instruction must be given according to the same system, so the clinical part preceded the didactic, while with us the order is

reversed, the "infirmary" or "clinic" being organized as an adjunct to the school, instead of making the college an outgrowth of the clinic. Dental practice was subjected to that of medicine, the licensing power being vested in a medical board. There is not and never has been a distinctive degree or doctorate. After pursuing the required course of study the dental student is examined in the "Royal College of Surgeons," which is a federation and not a teaching institution, and if he is successful he receives from this medical board a license to practice and become an L.D.S. (Licentiate of Dental Surgery). He is responsible to this medical council, and his name may by their action be stricken from the roll of registered or licensed dentists at any time.

As medicine takes no cognizance of mechanical or prosthetic work, it naturally follows from this method of organization that nothing save dental medicine and surgery can form a part of the medically recognized practice. Separate dental schools for teaching all the branches of dental practice could not receive the approbation of the medical council, which was the sole recognizing body. In the newly organized dental hospitals nothing save that recognized by medicine could be placed in the curriculum. As prosthesis and dental mechanics really formed an essential part of our specialty, and as they could not be entirely divorced from it, instruction in these departments, which were of necessity ignored by the licensing board, must be provided for outside the recognized teaching institutions. Accordingly a system of apprenticeship was devised, by which the student was bound out to any practitioner who would receive him, and thus his training in one of the most important branches of our practice was entrusted to irresponsible, perhaps totally unqualified men, over whom no jurisdiction could be exercised by the teaching staff of the regular school, while prosthesis was practically divorced from a recognized practice. This, it appears to us, is a fatal defect in a system which has some admirable peculiarities. The nature of dental practice is such that no clear line of demarkation can be drawn between the medico-surgical and the mechanico-practical, analogous to that between ophthalmology and optics. When they are thus practically ignored by the licensing body, the operative and the prosthetic are placed at a discount; the general feeling is that they are inferior and barely to be tolerated in a professional man, and there is a tendency toward their being neglected and despised by the better class of the profession. But although under the English system this portion of instruction is relegated to a mere mechanic, the time spent by the student as his servant is included in the dental course, which is thus apparently extended beyond that which is covered by regular instruction. The same methods prevail in most countries of Europe. It is but fair, however, to say that the better portion of the English profession have recognized this anomaly, and in some of the schools mechanical laboratories have been instituted. The course is not, I believe, yet made obligatory in any of the twenty-two dental teaching institutions of Great Britain.

The instruction in practical operative work is not conducted as in America. While a certain number of fillings are required, their character is somewhat different, and more plastics are used. Extraction is made a much more prominent feature, and the "surgery" is to an American sometimes a very repulsive place. The whole scholastic English course can now be covered in two years, which was the point to which our own colleges had developed previous to the organization of our modern curricula. A dental license can be procured from a general or medical hospital after taking but one course of lectures in anatomy, physiology, surgery, and medicine, while the requirements in chemistry and physics may be obtained entirely outside the qualifying course. The obligatory hours are also less than in most American colleges. The instruction is, however, fairly thorough in the branches taught.

The chief points of divergence, then, of the English system of professional instruction lie in the fact that prosthesis really forms no part of obligatory college study, but may be entrusted to a mere mechanic, not necessarily having any professional status of fitness for the responsibility, while with us it forms an integral part of the college course. Also, there is no qualifying degree which crowns the course of study. The student after finishing with the schools takes an examination at the hands of a medical board, which knows little of dental practice or necessities, and which is not in close sympathy with it.

The preliminary requirements in England are considerably less than those of the better American standards. The highest compulsory English requirement is rated by the Regents of the State of New York as the equivalent for two years of high-school work. The law of that state contemplates four years of high-school work as a preliminary, so that the English standard is just half that of New York.

Upon the continent of Europe the same general system prevails, save that dental education in most countries is conducted in the universities, forming a part of the medical course. France, however, has distinct dental schools, which are not engrafted upon so-called hospitals as in England, and which in some respects approach the American colleges in methods. Like nearly or quite all schools outside America, however, they are more thorough in the theoretical than in the practical work done. There are in France five dental schools at present, three of them being in Paris, and of these pre-eminence should probably be given to the *École Dentaire de Paris* and the *École Odontotechnique*. As in England, dentistry is considered as a branch of medicine, and the qualification for matriculation is obtained by examination at the Sorbonne, University of Paris. No foreign equivalent is accepted in lieu of this. There are two examinations, the one written and the other oral. The written is to determine the possession of a thorough knowledge of the French language, and consists in translating into French the writings of some standard author from the Latin, German, English, Italian, or Spanish languages.



The oral examination embraces the following subjects: French literature and grammar, and the elements of arithmetic, algebra, geometry, physics, chemistry, geology, zoölogy, and botany. The course in the dental schools is nominally three years of nine months each. About two hours of each day are spent in practical work, and dissections are in addition. The schools have infirmaries to furnish operative practice, but the charges are usually so high that they are but poorly patronized, and students have few operations to do. Examinations are optional, as the schools grant no degree, and their diploma is honorary, carrying with it no legal rights whatever. Should the faculties "pluck" students because of deficiencies, it would in no way interfere with their right to an examination for practice at the hands of a medical board.

Admission to practice is granted upon passing the examination of the Faculty of Medicine, which gives a government diploma. Foreigners are only admitted to this under certain restrictions. This examination is almost entirely theoretical, no practical qualification being demanded, and any one who passes it has the legal right to practice dentistry. Hence doctors of medicine are competent dental practitioners, whether or not they may have pursued any dental studies. The dental schools are thus very much hampered, as there is absolutely no legal encouragement to the establishment of a thorough course in practical dentistry, it being treated as a part of medicine, the mechanical branches, as in England, being ignored by the governing authorities. There are no technic laboratories, and such branches as bridge-work are taught outside the schools. All this tends to make French graduates very thoroughly versed in the medical while they know comparatively little of the practical part of dentistry.

The preliminary educational requirements in France are about one year in advance of those of England, or an equivalent of three years of high-school work of the state of New York, which, because it has a fully organized state department of education, covering both the grammar or common and the academic or high schools, is taken as the American standard.

In Germany there are two classes of practitioners,—the Zahnarzt and the Zahntechniker. The latter are dental mechanics or prosthetic practitioners, and practice as such. They pass no examinations and are required to take no course of study, although they may perform any kind of dental operation. The whole distinction would appear to be in the name, a zahntechniker not being permitted to call himself zahnarzt, or tooth-doctor, but simply tooth-worker or tooth-artisan.

For admission to the examination as zahnarzt or tooth-physician, the student must be in possession of a certificate showing that he has passed the grade of "upper secunda" (prima reife) of a German gymnasium or "realschule," which the Regents of the University of the State of New York rate as the equivalent of about three years of high-school work. He must also have

had at least one year of pupilage with a German *zahnarzt*, or qualified dentist, or in a dental college, and a course of study covering at least four semesters of four or five months each (two years) in a German university. The college course, therefore, is but two years of obligatory study, and the rules governing even that are not as rigid as are those of American dental colleges. To us it seems woefully deficient in some respects.

The admission to practice is upon the passing of an examination before a government board of examiners, and it is divided into three parts:

Part I: The candidate examines a patient in the presence of the board, diagnoses any oral ailment, gives the prognosis and treatment, and writes a brief thesis upon it.

Part II: Written examination in—(a) Anatomy. (b) General pathology, therapeutics, materia medica, and toxicology. (c) Oral surgery and surgical pathology. In each of these subjects the student must answer two questions, which he draws from a receptacle containing about forty such.

Part III: An examination in operative and prosthetic dentistry, which is fairly thorough.

Part IV: An oral examination in dental practice before a board of examiners, one of whom must be a graduate *zahnarzt*.

Passing all these, the candidate receives his diploma,—not from the dental school, but from the Minister of Education and Religion (*Kultus Ministerium*) of Germany. It will be seen that this examination presents some positive advantages over that of either England or France, in that it is in part at least strictly dental and is conducted by boards in which dentists hold membership.

There are about sixteen dental schools in Germany, each being a department in a German university. The instruction is given in the medical classes entirely, save that from about three dental chairs. In the Dental Institute of the University of Berlin, for instance, there are three dental professorships, as follows: Oral Surgery, Dental Anatomy and Pathology (Prof. Dr. Busch); Operative Dentistry and Bacteriology (Prof. Dr. Miller); Prosthetic Dentistry (Prof. Dr. Warnekros). Each of these professors has one or more assistants. The organization of the staffs of the dental departments of the other universities is about the same. Regular attendance upon lectures is not obligatory, and there is no record of it, save the "Anmeldebuch" issued at the opening of the term, to which the professor adds his name at the close, in token of the student having been a member of the class. No specified number of terms are necessary; it is only required that the candidate pass the examination of the government board. The clinical advantages are fairly good, there being both infirmary and laboratory practice.

To an American, the principal weakness of the German course is that it is too exclusively medical in its instruction, and that there is an absence of the diploma or degree which makes an exhaustive examination at the close absolutely necessary. The

fact also that a course in the dental school is not essential to practice, but that any one may perform any dental operation as a *zahn-techniker*, so long as he does not claim the title of *zahn-arzt*, seems a fatal defect. In this country we believe the dental college training the first and great requisite.

The dental educational system of Austria is analogous to that of Germany. It differs, however, in having a higher preliminary educational requirement, it being the equivalent of four years of the New York state high schools, or one year more than that of Germany. It also requires that the dental student shall have previously taken the full medical course, the dental studies being post-graduate to that. As in Germany, the number holding the full dental qualification forms but a comparatively small part of those in actual dental practice.

In Russia about the same preliminary educational requirement for dental practice as in Germany is required, or the equivalent for a three years' high-school course of the state of New York. No dental schools exist aside from the medical schools, all the college instruction provided being a few special lectures in certain of the universities. None in practical work is given, but for a license to practice three years' apprenticeship with a qualified practitioner is demanded, after which the candidate is permitted to take an examination before a medical board, as in medical practice, passing which he receives a license to practice.

The dental schools of most of the other countries of Europe in which they have an existence are founded upon the system of Germany, with, of course, certain definite modifications. With possibly a few exceptions they are inferior in character, so far as dental instruction goes. In Switzerland, which is a republic somewhat analogous to our own, there is a cantonal and a federal qualification. The latter is obtained by an examination conducted by a national board, and it represents a fair standard of theoretical work. But, as in England and France, the practical part is ignored by the medical boards, and therefore the qualification is deficient as compared with our own.

In Sweden there is an excellent dental department of the Caroline Medico-Chirurgical Institute of Stockholm, but there appears to an American the same defects which mar the other European dental schools,—there is too much of general medicine and too little of dentistry to allow close comparison with our own. It is believed there are no other countries in Europe possessing dental schools whose courses are equal to those already named.

With the possible exception of Melbourne, in Australia, we know of no dental school in any city of Asia or Australasia which deserves consideration. The one in Melbourne has an American dentist as its dean, but not enough is known concerning it to give it any special rating. It has been in existence but a short time.

There are no known dental schools in either North or South America outside the United States whose courses can be ac-



cepted as an equivalent for even one year of the recognized American schools, save the Royal College of Dental Surgeons of Ontario, Canada.

A few years ago the American Association of Dental Faculties appointed a committee to have jurisdiction over American educational interests in foreign countries, to determine what preliminary qualifications should be demanded of foreign matriculants in American dental schools, and what consideration should be given to their graduates who wished to obtain the American degree. That committee was given authority to appoint advisory boards in each of the foreign countries, preferably those holding the American degree, who were at the same time qualified dentists in the country which they were to represent.

Such boards have been named, and it has been made a part of their duty to report upon the condition of dentistry and the system of dental education in their respective countries. Based upon these reports the Foreign Relations Committee has prepared and presented to the National Association of Colleges a schedule of equivalents to be allowed the graduates of foreign schools in our colleges. They have been unable to accept more than one year in any case, and that only in certain schools of Great Britain, France, Germany, and Sweden. That is, those holding certificates of having completed the courses in those colleges who desire to enter American schools of dentistry can be given one year's advanced standing, and permitted to enter the present junior classes. It is believed that this allowance is just, and all that should be granted. It must be recollected that in none of these countries is any consideration whatever given to our American courses of instruction. It would appear to be not only fair, but wise and judicious, to extend to foreign students who seek our shores every consideration which is of right their due, and this principle seems to have governed the committee in all its decisions and recommendations. In the past, Americans generally have had an exaggerated idea of the value of foreign qualifications. A careful weighing of all the conditions appears to furnish evidence that there is no system of dental education which for effectiveness and thoroughness in all its departments bears any comparison with that originally founded by Chapin A. Harris and his associates, but which since his day has broadened and developed into the complete curriculum of study which obtains among the members of the American National Association of Dental Faculties.

At the last International Dental Congress, held in Paris during the summer of the year 1900, a temporary organization of the dental teachers of the world was effected, and the first meeting was held in London and Cambridge, England, during the past summer, at which seventeen nationalities were represented. Nearly every one which pretends to have a complete system of dental organization sent delegates,—England, in which the meeting was held, being the only one which could be said to decline active co-operation. The Commission of Education of the International

Dental Federation is made up of those interested in dental education. An American, Prof. T. W. Brophy, of Chicago, is its president. The next meeting will be held in Stockholm, Sweden, during the coming summer, and an attempt is to be made to bring into harmonious relations the educational systems of the different countries of the world. It is believed that dentistry has much to hope for from this organization, and it is greatly to be desired that a large delegation will be in attendance from America. A careful study of its objects and methods is earnestly commended to every one interested in dental educational progress.

---

## THE USE OF HOT CARBOLIC ACID.

BY N. S. JENKINS, D.D.S., DRESDEN.

**A**BOUT a fortnight ago I had an inspiration. Life had become a burden because of an overgrown, anemic, timid, nervous, hypersensitive, seventeen-year-old German-Russian boy, whose heredity and whose training had bred the conviction that if he were uncomfortable there was something radically wrong in the construction of the universe. All European practitioners are familiar with the type. When grown to manhood men of this class can storm Plevna, or go through a winter's campaign in the Balkans laughing at danger and rejoicing in hardship, but are liable to faint when baring the arm for vaccination.

The temptation to temporize with such a patient is often almost irresistible, and sometimes, indeed, temporary operations are indicated; but in this case there was no question as to what duty required. Permanent operations were necessary, but how were the cavities to be prepared?

Having selected one of the most difficult compound cavities and, with infinite precautions, prepared the edges and cut down the jagged masticating surface and dried it, as well as possible, considering that neither cold, nor warm, nor hot air could be tolerated, I suddenly resolved to try hot carbolic acid. A bit of cotton was saturated with boiling hot carbolic acid\* and slowly and gently insinuated into the cavity. It worked like magic. Sensation ceased at once. In three minutes the bulk of the soft decay could be painlessly removed, and after two other applications the last vestige of diseased tissue was easily obliterated. Never had I seen an obtundent work so quickly or so effectually. The chip-blower could be used at once. Layers of softened dentin could be peeled off from over a nearly exposed pulp and a permanent filling made with unexpected ease.

Since then I have used this method in other cases, and have become convinced that in cavities in soft and immature teeth and with partially devitalized pulps which still cling to the walls of the root-canals with obstinate tenacity, and where gangrened pulps have

---

\*Dr. N. S. Jenkins in a cablegram dated February 11 says: "Twenty per cent. cocain with hot carbolic acid seems more efficient."

brought teeth to the very verge of abscess, we had in hot carbolic acid a therapeutic agent of great potency. It is questionable if it will be of much value in cavities in dense teeth, or in cases of sensitive erosion, but, if my original conviction is confirmed, its combination with other agents,—as for instance, cocain,—will naturally follow, and may greatly extend its field of usefulness.

It is most probable that others have used this remedy in the same way, for "there is nothing new under the sun," but never having seen notice of it, I hasten to impart the results which I have obtained, in the hope that my limited but promising experiences may lead to more thorough investigations in the way of alleviating human suffering.

---

## CORRESPONDENCE.

---

### INTERSTATE EXAMINATIONS FOR DENTISTS.

TO THE EDITOR OF THE DENTAL COSMOS:

*Sir*,—When the National Association of Dental Examiners was organized, it was looked upon by dentists as a step in the right direction, and they hoped, and had reason to expect, that the much-needed reciprocity in state examinations would be brought about. Interstate examinations for dentists seem to be greatly desired; and, to a casual observer, delays seem entirely uncalled for.

Cases are frequently occurring where a dentist for various reasons wishes to change his location. Perhaps he has been twenty or thirty years out of college, in actual practice, and would, notwithstanding all his qualifications and experience, be entirely unable to pass an examination before a state board. As the laws now stand he is liable to a fine if he attempts to practice out of the state in which he holds a license.

It is to be hoped that the National Association of Dental Examiners will soon be able to bring about this much-needed reform.

A. F. DAVENPORT, D.D.S.

NORTH ADAMS, MASS., January 1, 1902.

---

### THE ANESTHESIA DEMONSTRATION AT THE INDIANAPOLIS MEETING.

TO THE EDITOR OF THE DENTAL COSMOS:

*Sir*,—I have read Dr. W. A. Heckard's paper read at the Tri-State meeting at Indianapolis, June 4, 1901, and published in the January, 1902, COSMOS, and find on page 20 of that issue the following: "I gave her the dry air with the gas, and she passed into a sleep. I excavated two cavities and took the pulp out of a second inferior bicuspid, dressed the canal, put a piece of cotton with sandarac varnish in cavity, and allowed her to awaken. I kept her asleep for about six minutes."

I would like to know just what method of operation was used,



the instruments used, and in detail fully as to the amount of work done in "about six minutes."

I also find near the bottom of page 20 in the same article: "Those who were here this morning saw that child operated on. It was no small chagrin to me that the doctor operated before I admitted that the child was anesthetized—that is, to the extent you have to anesthetize a child. The operation was so small that it would not have hurt the child much even if no anesthetic had been given, because there is hardly any pain at all in removing an adenoid, and the child simply had a few adenoids to be removed. . . . The doctor operated when the child was partially anesthetized, which was all right from his standpoint, but I wanted the child not to move. In my office I would have done the same as he did, but I wished the anesthesia to go a little farther in order to show that under this treatment, when sufficiently applied, the patient does not struggle."

I would like to ask why the administration of any anesthetic was necessary in the above case. Also, why should the anesthetic be pushed farther and beyond the good judgment, as expressed above, in a public assemblage than in a private office? and why should a child be subjected to such in the hands of professional men?—or, in other words, Are human beings who are willing to put their lives in the hands of the profession to have no security at all or consideration because before an assemblage?

FRANK Z. PIRKEY, D.D.S.

COLUSA, CAL., January 17, 1902.

---

TO THE EDITOR OF THE DENTAL COSMOS:

*Sir*,—In reply to Dr. Frank Z. Pirkey's letter [as given above], I take it for granted that he writes for information and not in a spirit of criticism. Had his inquiries been directed to me at my office it would have been a pleasure to have answered them at length. As it is, allow me space for a brief reply.

My paper was a diagrammatic explanation of an apparatus designed by me to improve the method of administering nitrous oxid; it was not a paper on operative dentistry, nor was it a paper on anesthesia, as Dr. Pirkey's inquiries would lead one to believe. The details of any operative procedure referred to therein would not have been apropos, and were therefore omitted. If he is especially interested in this line of work and will attend the meeting of the National Dental Association at Niagara Falls next August, I shall be pleased to demonstrate to him, in my clinic there, how to excavate sensitive cavities and extract living pulps under this anesthetic.

His second line of inquiry almost lead me to believe that he writes in a spirit of antagonism rather than with a desire to inform himself. However, "*Honi soit qui*," etc., so let me state again that this paper of mine was not on the subject of anesthesia, and I have no inclination to be drawn into a controversy on that subject in your columns. In explanation of one word used, however, I will state that while my paper was carefully prepared, I yet found it

necessary to extemporize a little while reading it, and thus the words, "In my office I *would* have done as he did" hardly express what I intended to say. I *might* have done the same.

The gentleman asks, Why was an anesthetic necessary in this case at all? and then makes further inquiry on lines totally extraneous to the subject-matter of the paper. To reply collectively to these inquiries, let me state that I had an appointment with the physician who operated, to anesthetize a patient of his for the purpose of removing an eye. The child substituted was one whom the physician was to have anesthetized that day with chloroform. I had nothing whatever to say in regard to the necessity for anesthetization, and the only responsibility I assumed was to guarantee that with nitrous oxid administered by my method equally profound anesthesia would be produced without discomfort or risk. In order to demonstrate this I desired a patient needing complete anesthesia; but the substitute patient did not need complete anesthesia, hence my demonstration was unsatisfactory to me.

Believing that all who are familiar with the subject of anesthetics will appreciate my feeling as expressed above, I am compelled to decline entering into a discussion on the desirability and necessity for anesthesia. "Life is short and time is fleeting."

W. A. HECKARD, D.D.S.

INDIANAPOLIS, IND., February 13, 1902.

---

## PROCEEDINGS OF SOCIETIES.

---

### IOWA STATE DENTAL SOCIETY.

THE thirty-ninth annual meeting of the Iowa State Dental Society convened at Clear Lake, Iowa, May 21-23, 1901.

The meeting was called to order by the president, Dr. T. A. Gormly, of Mt. Vernon, and was opened with prayer by the Rev. R. R. Wood, of Cedar Rapids, following which J. C. Wright, M.D., delivered an address of welcome to the society.

The next order of business was the president's annual address. Dr. Gormly touched upon the progress of dentistry, the value of association work, and the need for a wider culture and a broader education for dentists; but the subject to which he gave most attention was the need of popular education in oral and dental hygiene. Believing that increased intelligence among the people would defend them against the influence of fakes and charlatans, he insisted upon the necessity of dentists doing all in their power, either through such education as they can give their patients while operating, or through the preparation of pamphlets, or through the public schools, to increase the knowledge of the people as to the importance of saving the natural teeth, and also the means by which this may be accomplished. In furtherance of this object he advocated that the society should memorialize the General Assembly of the State of Iowa asking for the passage of a bill making the study of oral hygiene compulsory in the public schools.

The president's address being declared open for discussion, several members took the opportunity to express their concurrence with the views expressed by their president, and to compliment him upon the manner in which they were set forth.

The subject being closed, Dr. F. H. RULE, Ackland, Iowa, read a paper, entitled

#### INFLAMMATORY AFFECTIONS OF THE ANTRUM OF HIGHMORE.

No doubt the most common cause of inflammatory processes within the maxillary sinus is to be sought in dental caries. In this connection it is important to note that the size of the antrum varies, and therefore, although disease of the first and second molars is the most common factor of irritation, in cases of exceptionally large cavities, caries of the incisors, canines, or posterior molars may lead to a similar result.

Next in frequency, but numerically far behind dental caries, we must consider nasal disease (I say "consider," remember, not treat). Probably, sometimes, a direct extension of inflammation occurs from the mucous lining of the nose. It must, however, be remembered that obstructions of the normal orifices of communication may lead to diminished pressure within the antrum, and finally to exudation, which may decompose and lead to inflammation. It is by no means uncommon to find empyema of the antrum associated with nasal polypi, but in a certain number of such cases I believe that the antral affection is the primary lesion and that the polypi are the result of the flow of irritating pus over the nasal mucosa. Certain general diseases, too, may lead to the same result (according to Professor Kutchenbacher and others),—scarlatina, typhoid, erysipelas, diphtheria, etc. Extraction of teeth has also been known to be followed by empyema of the antrum.

Inflammation of the maxillary sinus appears under two clinical aspects, according as—

First: The secretion is retained and symptoms of tension are present; or,

Second: The inflammatory products have free drainage into the nose.

*Inflammation of the antrum, with retention of the secretions.* The patient complains of severe pain in the cheek and in the teeth of upper jaw. The whole region of the antrum is extremely tender, and at this stage sudden relief may follow a profuse serous or purulent discharge from the nose. If the retained matter fail to find an exit, the osseous walls are distended; sometimes pointing occurs toward the mouth, but more frequently the external wall of the corresponding cavity is bulged, and occasionally the floor of the orbit is pushed upward with resulting displacement of the eyeball.

*Inflammation of the antrum with free drainage of the inflammatory product into the nose.* It is of the utmost importance that this form of disease should be recognized and treated. The symptoms complained of vary considerably; sometimes advice is sought for chronic cold, and the unnatural character of the discharge has



quite escaped the notice of the patient. Occasionally the chief feature seems to be obstruction of the nostril on the affected side, due to the swelling of the mucosa, resulting from constant irritation set up by the flow of pus. A subjective sensation of bad smell, and occasionally bad taste when secretions descend into the mouth, are symptoms which can be almost invariably elicited by leading questions and which are sometimes mentioned spontaneously. Pain is not uncommonly complained of, but it is usually situated in the frontal supraorbital regions; occasionally it is paroxysmal and in all respects resembles simple neuralgia. This symptom is probably due to the swelling of the orifice of the frontal sinus and depends in a measure on the absorption of air in the cavity.

In a certain number of cases the beginning of the symptoms can be traced to a severe attack of toothache, followed by swelling of the face, and where this history is present diagnosis is much facilitated, assuming that the patient comes to the dentist on account of abnormal discharge. It is usually found that this symptom is most marked on first getting up; and again in the case of those engaged in office work, on sitting down to write. Sometimes patients observe for themselves the fact that it occurs more copiously when lying on the opposite side. Sometimes there is a certain amount of tenderness on pressure over the region of the affected cavity, and occasionally the gums on the corresponding side are distinctly congested. Perhaps the most effective means of diagnosing the presence of pus in the antrum is to make an exploratory puncture with a hypodermic syringe, armed with a strong needle. Aspiration through the normal orifice is recommended by some. I do not think that any method which requires this can be looked upon as satisfactory, because the manœuvre is impracticable.

**Through-illumination:** An electric lamp of about five-candle power is placed by means of a specially constructed tongue-depressor in the patient's mouth. This should take place in a dark room. Professor Garel has pointed out that if the patient's eye be shut while the electric light is within the mouth, the luminous impression is perceived through a healthy antrum, but not when a cavity contains pus.

As to the best method of opening the antrum, authors are also divided in opinion as we have seen. The root of the evil in most cases is to be sought in a carious tooth or stump, and this must certainly be removed. A favorite method of treatment is to open into the cavity through the socket of an extracted tooth. Some recommend to open through the canine fossa,—I have done it both ways.

Before leaving the subject of inflammatory affections of the antrum, it may be well for me to refer to some cases that have come under my hands in the years of my practice of dentistry.

*Case I.* About five years ago Mr. B. had the upper left third molar extracted by a physician. He experienced no trouble from the extraction until about two weeks afterward. Since that time he had had progressively increasing pain, the cheek being swollen. He came in for me to extract the tooth, the second molar, which

apparently was the seat of the pain. Upon examination of the case I found the second molar sound in every respect. Found a little pus issuing out of the socket of the third molar that had been extracted. Passed a probe up into the opening, carrying it through into the antrum. On removing the probe quite a quantity of pus escaped. Enlarged the opening, and in doing so discovered some foreign substance in the antrum. Got hold of it with pliers, but could not remove it. I then took a thin long-beak forceps, and to my great astonishment removed the third molar from the antrum. Washed out with warm solution of boric acid, followed by peroxid. Dismissed my patient after three treatments.

*Case II.* Miss C., eighteen years old, living in the country, had trouble with her teeth all her life; nothing left but old roots. Had been complaining of pain on the left side of her face. On March 17, 1896, she called on me to have her teeth extracted. The left cheek was badly swollen. At times had had discharges from the left nostril for a year past. Had been treated for nasal polypi by her doctor. Upon examination I found all the roots (for teeth there were none) on the left side of the superior maxilla floating in pus; cheek swollen, eyes partly closed. Removed the roots, found the floor of the antrum necrosed, scraped away all necrosed bone I could find; washed out with tepid water followed by five per cent. carbolic acid; second treatment on third day, tepid boric acid solution followed by peroxid. After six treatments patient was dismissed cured. On July 1, 1896, put in a full upper set of teeth.

*Case III.* Mr. B., a telegraph operator, came to see me August 10, 1900, having had headache off and on for the past year; had been to see several physicians. Had never known before what headache was. I examined his teeth and found in the upper left first bicuspid a large amalgam filling that had been inserted about two months before; never any trouble from it. The upper second bicuspid was nothing but a shell, pulp dead; never bothered him. The first molar was sound, also the second. The third molar was badly broken down through decay, with a live pulp. I extracted the third molar, applied the rubber dam on the second bicuspid, found the root-canal in good shape, contents of the canal seemed to be in a dried-up condition. Cleaned out with peroxid, filled the root with chloro-percha, followed with cement filling. August 17th, patient returned; still complained of headache, with a continuous dropping back into the throat; bad taste, and breath very offensive. Upon examination of the teeth they all seemed to be sound. The bicuspid I had filled indicated no trouble. I came to the conclusion that the conditions here present were as follows:

First. The secretions had been retained in the antrum and tension was present, causing headache and pressure.

Second. In filling the second bicuspid I had shut off the escape of gas and forced a drainage through the middle meatus. I concluded to extract the second bicuspid. Say, the stench drove me out of the office. My patient remarked that he must have been dead for some time. There must have been two ounces of pus from the antrum, of a dark brownish yellow color. Washed out

with tepid boric acid solution, followed by peroxid, which would pass through the antrum and out of the mouth and nostrils. I inserted a goose-quill an inch and a half long for drainage. On the 18th, repeated the above treatment. Patient's headache gone. Continued the treatment for four weeks with a slight improvement. On September 18th, changed my treatment to tepid solution of boric acid followed by a five per cent. solution of protargol. Protargol is a silver proteid, a yellowish light powder easily soluble in water, forming a brown liquid, dark according to strength, of neutral reaction, and unaffected by exposure to air, heat or light. It is somewhat similar to argonon, but differs in that it contains twice as much silver as argonon.

There was a decided change for the better after the third treatment with protargol. The pus underwent a great change from a dirty yellow to a nice bright cream yellow. About this time my patient went home on a visit and I did not see him again for six weeks. While at home he went to his family physician, who operated upon him, making an opening through the canine fossa, inserting a rubber drainage-tube about the size of a common lead pencil. Dr. C. gave him a 15 per cent. nitrate of silver solution to wash out antrum.

On February 12th the patient returned to me. I found the case in bad shape; patient complained terribly after using the 15 per cent. nitrate of silver. Complained of awful headache and that his left eye seemed to jump out of the socket. We stopped the use of the nitrate solution and went back to boric acid and peroxid.

March 26th, pus still continued to come from the opening made in the canine fossa. Patient complained somewhat of the first molar. I removed the amalgam filling from the first bicuspid, found it healthy, and refilled it. Took my engine and with a sharp drill passed down through the crown of the first molar into the pulp-chamber. No pain. Also through the crown of the second molar. No pain. Took my broach and passed up into the buccal roots. Only then did my patient complain that he felt it. No blood appeared until I used my broach, and then but very little. March 1, 1901, removed the pulp from out of the first and second molars, filled the roots and pulp-chambers with chloro-percha and cement fillings. Instructed my patient to discontinue the peroxid, reduce strength of boric acid solution, and wash out night and morning.

May 2d. For the past month my patient has been improving. There was a decided change for the better soon after devitalizing the pulps in the first and second molars. He comes to my office now twice a week. The dropping back into his throat has discontinued. Very little pus appears in the drainage-tube, and I believe he is on the highway to complete recovery.

I do not expect to advance any new ideas, but to bring out the ideas of those who have had more experience than myself, and to gain information from them. If successful in this, I shall feel that my efforts have not been in vain.

This paper was discussed, together with the following paper, by Dr. O. H. SOSSAMAN, Clarion, Iowa, which was then read:



## PRACTICAL CASES OF DISEASED ANTRUM.

Believing that the diseases affecting the antrum have not received the attention in our society meetings that they should, I wish to present reports of a few cases and their treatment, for the purpose of bringing about a more uniform treatment by the general practitioner, and that we may arrive at the most scientific method of treatment of a disease that by some of the best authorities is pronounced incurable.

First case: Mr. J., aged forty; occupation, laborer. History: The upper right first molar was extracted, but broken in the operation, by a physician, and in trying to remove the roots, one was forced into the antrum. Suppuration took place, and about six months afterward the root dropped from the antrum through the opening, the latter being about a quarter of an inch in diameter. The physician continued to treat the disease for some time. Then a change of physicians was made. Changing about from one physician to another continued for nine years without any material improvement, the patient suffering continually from pain and a continuous putrid discharge, the opening at this time being so large that in an effort to blow a band instrument the breath all passed through the opening into the nose and no sound could be made on the horn.

Treatment: The antrum of Highmore was thoroughly cleansed with hydrogen peroxid, then one-half dram of aromatic sulfuric acid was injected into the antrum undiluted, no curetting being necessary, the action of the sulfuric acid being depended upon to remove any diseased bone and tissue present and ultimately cause a new wound. This treatment was continued at intervals of one week until three treatments had been given of the aromatic sulfuric acid. In the intervening time the affected parts were cleansed with listerine, and in the final treatment campho-phénique was used. The case continued to improve from the first treatment, the opening into the antrum being curetted frequently, as the opening closed, and at the end of five months the patient was cured and the antrum appeared perfectly normal. It is now nine years since this cure was effected and no relapse has taken place.

I have treated two other cases, but they received treatment in the incipient stage. The same line of treatment was followed in each case with as satisfactory results. Therefore I will not burden you with a detailed account of the others.

If I have imparted any information that will alleviate the suffering of humanity in this line, I shall feel well repaid for this feeble effort.

*Discussion.*

Dr. C. R. BAKER, Davenport. In years gone by the cause of diseases of the antrum was too generally attributed to the teeth. When I was attending lectures at the University of Pennsylvania, Dr. Darby used to tell us that most of the cases of diseased antrum were caused by diseased teeth, but my experience and observation since then has led me to think this is a mistake. I can recall five cases in my practice in the last few months, and

three at least had nothing at all to do with any disease of the teeth. In Dr. Rule's paper, antral trouble caused by inflammation arising first in the mucous membrane of the nose was mentioned. I think that such an origin is responsible for the greater number of antral cases, but we must take into consideration the fact that the antrum of Highmore is connected with other sinuses, as the frontal sinus and the ethmoid sinus; these may be diseased in such a way that the discharge from them will get into the maxillary sinus, and we will have a diseased condition whose origin is still farther removed, the discharge from another source coming through the antrum of Highmore. Now, as we have these conditions, are the dentists the ones who should treat these diseases? I have seen cases where operation after operation was performed and finally it was necessary to go through the antrum to the other sinus to remove the cause and obtain relief. I have had several cases brought to me simply for opening the antrum, and I find that these cases are not in my sphere for treatment, except so far as I could operate in a better way and had the instruments to open and prepare the way for another specialist to treat.

One symptom of diseased antrum has not been mentioned; that is, the patient often has an indisposition to any physical exercise and an incapacity for the performance of business. I have heard of cases of temporary insanity from this cause, which was relieved by operation on and treatment of the antrum. As a general rule, those affected by this trouble will have a desire to keep away from all business, and we must not forget to recommend and insist on outdoor exercise or systematic exercise in the gymnasium to keep up the circulation and the tone of the system. We must not neglect this if we are to have good results from our treatment of cases, and on account of depression of the system we must use tonic remedies to build up the system.

Locally we must open thoroughly into the antrum. We are too apt to think we can do all that is needed through a very small opening, but I believe we must make such an opening that we can get to every part of the antrum, and if necessary get beyond. To cleanse thoroughly we must get at all parts. The antrum is not always one open cavity; we find many little fissures and formations running crosswise and in different ways, and these will be found diseased. The use of acids may be sufficient for the treatment and removal of the diseased substance in cases of this kind, but I believe a surgical operation opening the antrum and breaking down these tissues to be the first step and the most necessary thing to do in these cases.

Dr. T. E. DOUGHERTY. Physicians ignore the dentists every time in such cases as these. They consider them surgical cases, and that the dentist has not the ability to handle them. I think that if the general public could know that a dentist can operate upon the face as well as a physician, and perhaps better, it would be better for the patient. In the report of Dr. Sossaman's case, physician after physician had treated it for years, until the patient at last returned to the dentist, where he belonged, and received

treatment that cured the disease. I do not see why the general public cannot be informed in regard to these troubles in such a way that they could be handled without being imposed upon. It is an imposition both upon the patient and the dental profession.

Dr. BAKER. I do not want anyone to think I feel hard toward the physician or the specialist mentioned in my report of that case. They are both among my best friends and would do anything for me. In fact, they would prefer not to treat these cases.

Dr. MONFORT. I would like to ask Dr. Baker how that case came out.

Dr. BAKER. I am not through with it yet, but there is hardly any discharge and I shall close the opening soon.

Dr. MONFORT. I ask the question because I was in Dr. Baker's office last fall and the patient came in. It was after he had made his final diagnosis. He showed me the case and I have been interested in it.

Dr. J. V. CONZETT: I am glad this subject came before the society. I have no criticisms to make or suggestion to offer as to the line of treatment, but I do wish to emphasize the statement made by Dr. Baker, that not all cases of antral inflammation are due to diseases of the dental organs. I have had three cases during the past year, and only one was caused by dental trouble. I believe that in many cases it is not necessary to open into the antrum at all, but by treating the patients systemically they may be cured.

Dr. BAKER. As Dr. Monfort has asked about that case, I desire to say that I believe if the gentleman had continued the treatment properly, it would have been healed before this time, but after treating for a while with a specialist, he went away and did nothing for it for two or three months, when he came back with the condition just as bad as ever with pus formed. For a few weeks now I have been treating it quite regularly.

Dr. J. B. PHERRIN. I think that in a great many of these cases of inflammation too many operations are performed. I have had one or two cases that have convinced me that it is as well, when possible, to avoid making an opening. One case, a man, came to me with a discharge from the antrum that had continued for nearly thirty years without ceasing, in amount about a teaspoonful each time and for the last fifteen or twenty years every morning the man had been so nauseated that he could not eat breakfast. He said life was hardly worth living. When I first examined the case, I passed an instrument into the antrum through an opening in the region of the first molar, and I felt a sort of gritty substance that was not bone, but which I thought at first was a metallic substance. I endeavored to grasp it, but it slipped away. Some time afterward I was treating him, after an absence of about three weeks, and I felt this substance again. He told me then to take the whole side of his head off if necessary to get at the object. At that time I believed in thorough operations. I opened it up and passing down directly into the opening



I removed a piece of a tooth with the root parts observable. That was a distinct case of that kind of trouble.

Another case that I was glad I did not operate on was that of a young lady who had this trouble, with all the pain and symptoms that have been enumerated and pus discharging from the socket of the first bicuspid. I had just about made up my mind to open through the antrum, but before I did it I put a small filling on the posterior surface of the bicuspid. In cutting the cavity out I discovered there was no sensation there at all, and I at once began to examine it. I found that the tooth was to all appearance dead. The pulp-chamber was empty and the antral trouble all sprang from the condition of this tooth.

Dr. A. E. OSBURN. I believe the best way to introduce remedies into the antrum is by the use of the nebulizer, which converts them into a spray and carries them to all parts of the cavity. It is very efficient.

Dr. BROWER. I am always glad to listen to a paper or discussion on antral disturbances. My experience in treating antral abscesses dates from my early practice. I think that physicians and dentists use too much of the stronger medicines, and that milder treatment would in many cases be better for the patient. Physicians are sometimes unwilling to have a dentist take charge of a case of antral disease. They think the dentist incompetent. I know that from my own experience, but to-day, out of the sixteen or seventeen physicians in LeMars, not more than one or two would take a case of antral abscess. They would send it to the dentist in preference.

Dr. P. H. JONES. I have a case that illustrates the fact that antral inflammation does not always come from diseased conditions of the teeth. A lady, thirty years of age, came to me to have her lower teeth removed, the upper ones having been removed sixteen years previous. The day after the removal of the lower teeth she experienced severe pain in the antrum of the left side, which continued to grow worse until the second day, when there was a copious discharge of offensive pus into the mouth from the nose. The patient was much run down and under the doctor's care. She had never had any trouble of an antral nature previous to the removal of the lower teeth. The infection must have been from something besides the teeth.

Dr. HEWITT. At the risk of seeming obtrusive, I suggest that I read now from my paper a clause relating to the painless curetting of the antrum. In treating these cases, we first must understand the conditions as they exist, and then work according to them in each case. They will determine whether it is best to operate and what systemic remedies will be required in conjunction with the local ones.

The antrum is a closed pocket, that is closed with the exception of a very small opening. When inflammation occurs and passes to the point of suppuration, the pus and serum accumulate within this pocket. The floor of the pocket is bone and the outlet small, hence it is impossible for the pocket to drain itself, so it fills up

and the pus that is formed is carried into the circulation in an attempt to get rid of it. So it seems to me that sometimes, and I am very certain about this, it is necessary to open that pocket to establish drainage. Then the question arises, Where shall the opening be made.

I have had a large experience with these cases, and it is no play to treat a case of diseased antrum. The essayists here have been very fortunate in being able to cure the cases described. They were skillful as well, but, to be able to cure the cases as they have, they have been very fortunate. I have known cases to persist for years after the best efforts of the most skillful surgeons of Chicago, and they usually come to dentists after they have gone through the hands of a series, first of physicians, then surgeons; then something happens to the teeth and they come to the dentist, and there the real work will begin; and I want to say to you young men, that you are just the men, for all the world, to take the case. Don't send it to a physician or surgeon, but take care of it yourself. You can grasp the situation and know what the conditions are, and what you should use as remedies in every case; you know what kind of an opening should be made, and what cases should be opened. But, when the opening is made,—here comes the paragraph of my paper which I will read:

"The painless curetting of an antrum. The opening to the antrum should be made of ample size. The soft tissues around the opening should be anesthetized by hypodermic injections as close to the alveolar borders as practicable. Preparations for the injections should be made by a topical application of an anesthetic, the constituents of which would preclude its use hypodermically."

Some of you have heard of compound cocain pigment. It is still my favorite for topical use, never for hypodermic. A simpler one I will name:

Echafolta, f3ij;  
 Chloral hydrate, f3ij;  
 Cocain hydrochlorid, f3ij;  
 Fluid extract cactus grandiflora, f3ij;  
 Glycerin, f3ss.

This is antiseptic and I will speak of that a little further on. Then administer the general analgesic, that is, let him take chloroform as I direct, and your patient is ready. If properly instructed, he will be perfectly quiet or request more of the analgesic, in which case it can be safely given.

The general analgesic effect is produced as follows: The patient seated in your operating chair, body leaning back at an angle of about twenty-four degrees, but the head slightly forward in an easy position, never strainingly back.

Use a wide-mouthed bottle, one to two ounces in capacity. Pour into this about two drams pure chloroform or strong chloric ether. From this bottle so charged, get the patient to inhale the drug through the nose (holding one nostril closed) or through the mouth slowly at first, and after three or four inhalations, as

rapidly as may be without strangling or spasmodic coughing, and continue until the eyelids begin to droop lazily, the body muscles begin to relax, and a general analgesia is apparent, approaching well on to general anesthesia.

Now, when this stage is reached,—and I know what I am talking about,—the patient will open his mouth and will not emit a groan; he will be just as still as you wish him to be, and you can exercise that delicate educated touch of the end of the curetting instrument,—you can tell when you touch bone, you can tell when you hit diseased tissue and when you come in contact with healthy tissue. But if the patient were screaming and wiggling about and trying to keep away from your instrument, you might just as well throw away your curette and not try to do anything. It is of the utmost importance that the patient should be still that you may exercise that skill and educated touch that will enable you to find a piece of diseased bone, if it is there, and remove it. When you can keep him so, you can have high hopes of success.

Now I want to speak further of this echafolta. It is a comparatively new remedy that has the quality of antidoting the formation of pus. For instance, if a boil is forming, if the part is bathed in this and a compress is applied, it will abort the boil and drive it away. It will do the same thing with a carbuncle if taken in its first stages. It is a wonder in curing any gathering where pus is present. It is from the plant species called *Echinacea*; the meaning of this term is "hedgehog," and the plant is so called because it is covered with spines like the quills of a hedgehog. It is used extensively in Central America and South America as an antidote for the bite of the rattlesnake, the tarantula, and all venomous reptiles, and it is said to be as positive a cure for ague as quinin. It is a notable remedy in low conditions of health, such as typhoid fever and blood-poisoning. It is a surer specific for blood-poisoning than is quinin for ague. I think that it will cure any case of septicemia; that is saying a good deal, but what I believe I cannot help expressing.

A gentleman came to me six months ago with a ranula under his tongue. A physician had opened it and I believe his lancet was unclean or septic. At all events, he came to me, just sauntered through my doorway saying, "Doctor, I want you to treat me," and stumbled on to the lounge. His tongue was swollen, his pulse was 130 to the minute, his temperature was over 100, and he looked as if he would not live three hours. Frightened? Of course I was! I did not dare to send him over to the physician's, because I was afraid he would lose time and would die. I don't like to take the responsibility of human life in my hands, but I did this time, and I thank God that I did. I gave him echafolta. I took two drams and put it into four ounces of water,—I want you to remember this, for it may save the life of some dear friend, and you too will thank God. I applied the dose every fifteen minutes. When he came into the office and stumbled upon my lounge he became insane, perfectly wild, was talking of everything, and apparently was growing worse. I gave him two



spoonfuls of this medicine every two minutes. His face and the neck down to the shoulders were swollen,—a case of septicemia such as I have seldom met,—but I persevered in this treatment, and next morning his pulse had gone down to about 80 and the temperature to about normal. The treatment was continued two days, and the man is living, and says he owes his life to me. I think he owes it to an inspiration which perhaps a higher power had given me.

There is a portion in this formula of *Cactus grandiflora* that is recognized as one of the finest heart stimulants known to science. It is in the form of tincture or extract of cactina, a resinous extract from the cactus. I will be glad to show this medicine and tell everything I know about it. It is one of the best medicines that has ever come under my notice.

Dr. MILLER. Would it have the same effect in pyemia as in septicemia?

Dr. HEWITT. Yes, sir. In all broken-down conditions of the blood, especially in typhoid fever, there is nothing like it, and in typhoid fever and carbuncles it should always be taken internally, as well as applied externally.

Dr. MILLER. How long does it take for it to reach the finger-ends?

Dr. HEWITT. In about ten seconds it can be received into the blood and taken to the finger-ends or the ends of the toes. I can tell you there is not half enough attention to constitutional remedies taken internally in all these cases. You should learn that you are doctors of dental surgery. Do not send your patients off to the doctors; make men of yourselves! grow, vie with the doctors and beat them at their own game.

Dr. A. N. FERRIS, Waterloo. I am pleased with the manner in which Dr. Hewitt takes hold of things. I have visited him in his own office and seen him operate, and though he is a very busy man he is always willing to show anyone his ideas, and I have learned many things from him. I believe that, in many of his operations, his success is to some extent due to the superb confidence he has in himself. He has a power, possibly magnetic, over his patients, and can succeed better in administering anesthetics than any other person I know of.

Dr. HEWITT. I thank the gentleman for his kind words, but in fact every one of you can administer chloroform just as well as I can. I have no peculiarities in my fingers, I have not a big brain nor a very active one, and there is no peculiar knack about it. It does not need any. If you understand the underlying principles upon which chloroform acts, how it is taken into the blood and how it is carried around the system, how it goes out even to the finger-ends and all that, you can use it just as safely and surely as I can.

Dr. PHERRIN. I want to speak my mind. When I first met Dr. Hewitt (he probably does not recognize me) he gave a demonstration of the use of anesthetics,—chloroform,—and since then I have used it whenever I had occasion to, and I have had the

same splendid results. I think I have handled my patients in a better way than I could had I not learned from Dr. Hewitt, and I thank him.

Dr. RULE. I have not much to say on what has been said, but there are a few remarks I should like to make. I have many times thought and wished that some physician would steal some of my cases from me. I have been often bothered with them. This case I speak of in my paper, the last case, has been the most difficult I ever saw, excepting one, and that one was a young man, a foreigner, who came from Sweden to this country. He came to me and had an upper right first molar extracted on Saturday. This happened six or nine years ago. A physician took me over to the house on Monday following the Saturday, and when I stepped in I didn't know the young man. His head was swollen up and he was in a terrible shape. The physician said, "Doctor, I believe it's a case of antrum trouble. I wanted you to come over and see what you think about it." I took a probe and tried to pass it into the socket the roots came out of, but couldn't get it in, as there was no opening. I extracted the right second bicuspid. I never smelled such an odor in all my life as that. The physician was sick and couldn't come in, so I had to stay at my post because I was on the spot and couldn't get away, or I would have gone out.

That young man stayed in this country two months. The Austin Flint Medical Society of Iowa had a meeting in our little city about this time and he was before that body. The eye and ear specialists probed and examined him and they couldn't say what was the cause. The young man said that he had had trouble on that side of his head for some time, probably for the past year. Had some trouble on the way coming over, and after he resided here quite a spell.

He still supposed it was nothing but an ulcerated tooth, and concluded to go back to his native country. He went, and while on the water had more trouble. He was taken to Berlin and was in the hospital for one year. He had several operations performed. The last I heard of him he was well of his trouble excepting that that side of his face was gone. He was practically not a patient of mine. If there was anything injected in through the socket of the bicuspid tooth the fluid would come out of the openings, two on the cheek and one on the floor of the orbit. He had no more feeling on that side of the face than if I had been cutting a piece of wood. I believe the case I have now—as I say in my paper—is on the highway to recovery. There is very little pus, if any, and the secretions seem to be the natural secretions of the nostrils.

Dr. SOSSAMAN. One subject I want to touch upon; that is, whether any case of antral abscess after the time of life I mentioned has been cured. In one case of long standing it seems not to be cured, and I intended to ask whether in your experience such cases ever could be.

Dr. RULE. I have had no experience older than my first case.

One other question. All my cases have been affected on the left side. I never had an antrum on the right side that was affected or troubled. It has always been the left side, and I wondered if this was always the case in the practice of others.

Dr. SOSSAMAN. I can testify to two cases on the right side.

Dr. GORMLY. I had a case that had passed the period at which, it seems, the trouble can be cured; at least, after a long period of treatment the condition was only moderated. The patient gave it up and I could not persuade her to continue the treatment any longer. She lived in the country and it was difficult for her to come in for treatment. Since then I know nothing of the case, but in my opinion it was incurable, though I think she took treatment from a physician.

The subject was passed and the society adjourned until 8 P.M.

### *Evening Session.*

The meeting was called to order at 8 P.M., and a paper by Dr. O. E. GANOE was read, on "The Benefits to be Derived by the Introduction of Dental Science and Education in the Public Schools."

Dr. Ganoe's conclusions were that dental inspectors should be appointed to visit all schools to inspect the teeth of the pupils, and that some plan should be devised to give the pupils instruction in oral hygiene. This course would benefit not only the public, but the profession also, as there would be greater advantages for the orthodontists and other specialists, and it would tend toward the suppression of charlatanism.

The paper was discussed at considerable length, all agreeing upon the necessity of doing whatever may be possible toward getting the schools interested in the study of oral hygiene.

At the close of the discussion of this paper, the society adjourned until the next day.

### *SECOND DAY—Afternoon Session.*

The meeting was called to order at 3 P.M., and a paper by A. N. FERRIS, Waterloo, Iowa, was read—entitled "Vulcanite Rubber, Its Use and Abuse."

The paper dealt with the historical aspect of the introduction of vulcanite, its composition and physical properties, the objections which had been urged against its use, and its advantages as a base for artificial dentures.

The author contended that the general practitioner, in making vulcanite plates, does not always do full justice to the possibilities of the material. He made a strong plea for its more artistic treatment and for improved technique in its working, so that its full advantages might be utilized and competition of "cheap John" dental establishments be avoided.

### *Discussion.*

Dr. F. M. SCHRIVERS, Glenwood. Of course, we all agree that rubber opened the way for a cheap class of work throughout the whole country, but yet it was instrumental in bringing about an



advance in dentistry, and in increasing the volume of dental work to far above what would have been possible except with this comparatively cheap material. Yet cheap work is not necessarily poor work. In some instances very good work is done for a very low price. I do not believe that our code of ethics forbids a dentist to work for low prices, but it is a violation to advertise that our prices are low.

As to the durability of rubber, I think I would be justified in making the statement that it is probably as durable as any plate that is made, not even excepting gold. Of course there is more value to the gold plate than to the rubber when it is worn out, but that is beside the question of durability. I have in my practice a full set that has been worn for thirty years. The lower set has been repaired once. It is the most notable instance of durability that I have in my practice. Rubber is very durable, there is no doubt of it. It has the necessary strength and is very practical in the hands of most dentists who can do ordinarily good work. I believe it is the best attachment we have for gold and aluminum plates. In the old system we always left cavities under the teeth for food to collect in, and they thus became very unhealthy. Many dentists make mistakes in vulcanizing, they do not take time enough. In most rubbers the instructions say run the temperature up to  $320^{\circ}$ . I really think this is too hot, especially with heavy plates. It is better to be an hour vulcanizing at  $310^{\circ}$ , or even less than that. I have many times consumed two hours in vulcanizing a plate. If you are careful to run the heat up slowly, you can run it beyond  $320^{\circ}$ , even with heavy plates. I sometimes forget my vulcanizer; I remember not long since I had a case in the vulcanizer and the first thing I knew the temperature was  $400^{\circ}$ . I of course concluded the case was spoiled, but fortunately I had run up the heat slowly and when it was opened I found the plate in good condition and not at all porous. It was of course more brittle than it would have been, but otherwise all right. I think rubber is filling a very important place in dentistry.

On motion the subject was passed, and Dr. WM. FINN, of Cedar Rapids, read a paper entitled

#### CAVITY PREPARATION.

The essayist first described a simple approximal cavity, not involving the incisal angle. Three regions of the tooth are more liable than any others to decay, namely, the cervico-labial, the cervico-lingual, and the incisal angle. The reason for this is that these surfaces are not kept clean by the friction of mastication or by the lips and tongue in their various movements. To avoid recurrence of decay at these points in cases where the original cavity approaches them, it is advisable to extend the margin to a point which can be kept clean. Dr. Black calls this "extension for prevention." It not only prevents the recurrence of decay, but it brings the gold out of the dark corners so that it will not look like decay.

The cervical wall should be extended rootwise so that the gum will cover that margin of the filling. The reason for this is that a perfect filling, the cervical margin of which is well covered by healthy gum tissue, will never have recurrence of decay at that point. This brings the cervical wall flat labio-lingually. It should also be flat mesio-distally. This makes the best form, as the filling is more easily started and will not rock afterward.

The lingual wall should be freely cut away if it is not well protected by dentin. It must be cut at right angles with the cervical and axial walls and never be grooved, unless with a very slight groove in the corner where the cervical, axial, and lingual walls meet. This makes a nice little place for the first piece of gold, as it is in direct line with the plugger. The labial wall must be at right angles with the axial and cervical walls.

The incisal angle must be at right angles with the axial wall, must never be grooved nor must a pit be drilled. It may be slightly inclined toward the incisal edge of the tooth as it approaches the axial wall, thus making a slight dovetail to help retain the filling.

The axial wall should be flat and at right angles with the other walls, but in all cases care must be taken to leave as much of the dentin covering the pulp as possible, and all decay must be thoroughly removed.

The enamel margins should be leveled just a little and the dental enamel margins should be rounded. The enamel margin should always have graceful curves, and not short ones.

*Approximal cavities with approximo-incisal angle gone.* The cervical wall in these cavities is much the same as for the simple cavities just described, flat labio-lingually, also flat mesio-distally with a slight incline rootwise. It should be made as wide as the pulp will permit.

The lingual wall must be cut away freely, all but the cervical third and the end of the step. The cervical third must be at right angles with the cervical and axial walls. The step must be at right angles with the axial wall and far enough mesio-distally to form a good anchorage and as far as all dentin is exposed, if such is the case. Labio-lingually the cavity must depend on the thickness of the tooth. At the end of the step must be drilled a pit parallel with the long axis of the tooth.

The labial wall must be made at right angles with the axial walls and with the cervical wall. The labial wall of the step, or pulpal wall, should be at right angles with the step, and as thick as possible to prevent the gold showing through and to add strength. In teeth where the incisal edge is thin we may shorten the labial wall and build the gold over. Where this wall is left standing it should be beveled.

*Approximo-occlusal cavities in bicuspid and molars.* In cases where the occlusal wall is still standing it should be cut through with a rapidly revolving bur and the overhanging enamel be broken off with a chisel.

The cervical wall should be cut rootwise far enough to be over-

lapped by the gum. The cavity should be made flat bucco-lingually, also mesio-lingually, and should join the axial wall at right angles.

Buccal and lingual walls may be made at right angles with the cervical and axial walls, and may be slightly dovetailed as they approach the cervical wall.

The step should be cut at right angles with the axial wall and wide enough to afford strength. The weakest point being at the junction of the step with the main body of the filling, the buccal and lingual walls of the step should be made at right angles with the floor of the step. The end of the step may be slightly enlarged as it approaches the end of the fissure, and should be perpendicular.

The axial wall should be perpendicular and at right angles with the other walls.

As the next two papers were on the same subject, it was ordered that discussion be deferred till they were read.

The next paper was the following, by Dr. W. P. GALLOWAY, Estherville, Iowa:

#### CAVITY PREPARATION.

It is not the aim of this paper to call attention to methods of procedure strikingly new or original, or to any new or startling discovery in the manner of the preparation of cavities as they are presented to the busy practitioner. If with your permission I may offer a few suggestions that will serve as an incentive to be more particular, and thereby lessen the instances of failure in this line of our work, my object will have been accomplished. A practical view of the subject will be considered rather than a scientific one for reasons strictly my own.

There are many things to be taken into consideration which preclude the laying down of any set of prescribed rules. The preparation of a cavity in a measure begins before the patient is seated in the operating chair. The manner in which our patient is received, conducted to the chair, and up to the point when the operation begins has much to do with the accomplishment of a successful operation, and if properly done facilitates our ability to do effective work. When we remember that nine-tenths of all pain inflicted is in the preparation of the cavity, pain cuts a considerable figure in the consideration of this subject; therefore the comfort of the patient should at all times be considered, always impressing on the mind that the minimum amount of pain will be inflicted.

The first class of cavities to be considered are those in the anterior teeth in which gold would be the filling material used. If filled with the plastics less attention would be given to retention grooves. Otherwise, as regards the preparation of the cavity, the operation would be the same.

The first act in the operation is the breaking down of all frail walls and shaping the margins of the cavity. This is accomplished by the use of sharp chisels, but never with a bur. The locality and extent of decay largely determines the shape of the



margins; however, in the preparation all sharp angles should be cut away and graceful curves made to take their place. In this part of the operation we should, as much as possible, avoid advertising our operation, but not at the expense of good work, keeping in view the fact that it is highly important that good access to the cavity should be gained even at the expense of tooth-structure. Many failures in filling are due to poor and insufficient access. It is often necessary to extend the margins of the cavity beyond the point of decay, not only to gain proper access and give the filling a symmetrical shape, but to avoid recurrence of decay; therefore in approximal cavities they should be extended beyond the point of contact. The margins being established, we will direct our attention to the removal of decay and the formation of the cavity for the retention of the filling. As a rule, all decayed dentin in this class of cavities should be removed and the form of the cavity made to take the form of a triangle with rounded corners, with the base toward the gingival margin. This may be done with a sharp spoon excavator or a round bur. The inverted cone bur or any sharp instrument that will leave a sharp angle in the dentin should never be used in this class of cavities. In fact, I do not use the inverted cone bur in any cavity unless it be to tear out the remnants of an old filling. They serve an excellent purpose for that operation.

The retention grooves are made with a round bur, No. 1 or No.  $\frac{1}{2}$ , at the imaginary points of the triangle. The lingual angle groove is made the deepest for a starting-point; the labial and incisal grooves being only deep enough to lock the others. All the grooves should lose most of their undercut as they approach the middle portion of the cavity. This should be governed by the amount of force that it will be necessary for the filling to resist. The old rule that "enamel is best when supported by dentin" should be kept in mind. All deep pits and sharp undercuts should be avoided. The cavity properly formed, the final preparation of the margin should be completed. This is done by passing a sharp chisel or excavator around the margins, removing all roughness and beveling the edges, finishing with a coarse strip. If the cavity extend to and include the cutting edge, this edge should be well beveled by the use of a coarse disk. Upon the final finish of the margins depends the beauty of the filling.

Another class of cavities, in which there is some variation in their preparation from those already described, are those found in bicusps and molars. These cavities from their similarity of location being subject to the same forces and performing the same functions, what will apply to one is suitable for the other. Approximal cavities in these teeth involving only one surface are comparatively few, and so simple it will not be necessary for me to intrude upon your time to discuss them. I will only mention in passing that the removal of decay and the extension of margins beyond the point of contact are the most important points to be remembered. It is not necessary that these cavities be undercut to any great extent. The majority of cavities in

these teeth should be opened to the occluding surface, and where deep fissures show discoloration or from their relation to the margin of the cavity would form an imperfect margin difficult to fill, especially if gold should be used, they should be cut out forming a step, thereby gaining an additional anchorage and lessening the amount of the buccal and lingual undercuts in proportion to the amount of anchorage thus gained by the step. The margins should be prepared the same as those already described, with special attention to the cervical margin, which we recognize as the critical point. If the removal of all decay would expose the pulp, and especially if it is of a leathery kind, it should not be removed, but that portion immediately covering the pulp should be treated antiseptically and left to recalcify, thereby saving our patient needless pain and expense.

There are other cavities, such as buccal and lingual pits, those found in the fissures, and along the gum margins, as well as other conditions in those already alluded to, that might be discussed. I will leave those to you to solve by calling into service that one of our many virtues, one so well developed in most of us, namely, our inventive genius or natural ingenuity.

Then followed the paper by Dr. W. W. VANCE, Ottumwa, Iowa, entitled

#### HOW I APPLY SOME THEORIES OF CAVITY PREPARATION.

In taking up the discussion of the above subject I realize how easily one may be misunderstood; hence by way of introduction I will say that I am nothing if not sincere. I am fully convinced that the dental profession has made marked progress in what may be called the scientific preparation of cavities with the view to the prevention of recurrent decay. I would have you understand I fully appreciate this, and heartily approve of the application of the method lately called Black's method of preparing approximal cavities, especially in bicuspid and molars.

All good things are likely to be carried to extremes, and there is some excuse for the assertion that the too radical application of this method may often be conducive of untoward results and defeat the very object of its employment.

The theme of this monograph, however, is the inconsistency of the dental profession, in putting forth so much time, energy, and expense in the matter of such thorough scientific work, with no effort being put forth to properly inform the public of the increased benefits to be derived from the more thorough painstaking work we are striving to do. Having practically no knowledge of the enhanced value of such painstaking service, they are not appreciative, at least in a financial way, of the extra time and expense incurred by the dentist in performing his work as well as he can.

The preponderance of evidence goes to show that the almost universally prevailing fee charged for an alloy filling is one dollar; I claim that that amount is not a sufficient professional fee for the amount of time necessary to bestow on the preparation and



insertion of a good alloy in an approximal cavity prepared according to the radical application of Dr. Black's ideas.

The practice of dentistry is not altogether a philanthropic pursuit; when it fails to provide the practitioner with a reasonably decent livelihood it fails in its most important attribute, at least so far as the dentist is concerned. Consequently, until the *clientèle* of any practice can be made to understand the value of the increased time devoted to the operation in hand, and pay such increased fees as will compensate the operator for the increased time and energy spent upon the case, the thing is a failure.

It is not the purpose of the writer to take particular exception to any of the principles of these later methods of cavity preparation, but some of the teachings are so flagrant as to deserve special condemnation. I do not wish to be understood as being radical on the subject of the all-gold cap crown for molars and bicuspid, in advising it in a large majority of cases where large approximal cavities exist in these teeth, but to carry out the teachings of this method is but to invite the ultimate condition which would necessitate the insertion of a crown or the loss of the tooth. Especially is this so in the case of the bicuspid. These teeth are comparatively thin mesio-distally, and where there is any considerable cavity on either the mesial or distal surface, at least a small cavity may be found on the other surface. To cut away as much of the tooth as is necessary to conform to the requirements of the method in question, cutting out the fissure and extending the cavity into the opposite side of the tooth, making a compound cavity of it, is to deprive the tooth of a great deal of its strength to resist splitting,—which accident, if consummated, renders crowning imperative if the tooth be saved, and it may be expected sooner than that the recurrent decay sought to be prevented by the extensive cutting would be likely to result if careful preparation, but with less heroic sacrifice of tooth-substance, had been practiced. Consequently I claim that, from the standpoint of expectancy of durability, the tooth might better be crowned at once if decay exists on both of its approximal surfaces.

The same argument, with a slightly lower per cent. of failures, applies with equal force in the case of molars.

In the case of persons who do not regularly and properly care for their teeth, the argument in favor of crowning is still more forcible, for the reason that no other kind of work the dentist is capable of performing gives such good results, under neglect to cleanse the oral cavity, as well-fitting all-gold cap crowns.

If we could have a *clientèle* of selected persons with means to gratify the demands of exacting science, then the arguments above would be without force; but unfortunately we cannot have such a delightful consummation. The great majority of dentists are located in cities of from two to twenty thousand souls, and the item of expense for dental service cannot be liberally provided for except in the case of a very limited per cent. of the families composing such a commonwealth.

This brings us again to the subject of appreciation. Nothing



can be appreciated at its full worth until it is understood. I think if the value of dental operations was understood and appreciated by all of the people, as well as some of the matters of style, or the mandates of fashion, the "new Easter bonnet," for instance, a larger per cent. of the people would see their way clear to have dental operations done than at present. Pardon this digression, but it seemed to me apropos to the case.

Another of the methods unworthy of acceptance without qualification, if to be applied in the ordinary case as met with in practice, is the so-called step over the pulp, the argument being that the foundation wall of the cavity should be a plane at right angles to the direction of the lines of force in occlusion. As a matter of the application of a philosophical fact, that principle is perfect. But in actual practice how few of the cases presenting are not so badly decayed that to cut for a flat base would expose the pulp and leave absolutely no tooth-substance not softened by decay to form the step or bench out of, and when the decay has been removed there is, if you are fortunate enough to prevent exposing the pulp, a cavity more or less spheroidal in shape. I am speaking now, of course, more particularly of molars and bicuspid.

We come now to the subject of dental education among the people. By that I mean a better knowledge of some of the fundamental principles governing the attainment of the highest possibilities connected with the prosecution of our work.

It must be recognized by any thoughtful observer that the actual progress except in the matter of the grade of the alloys for filling, made in the last five years, is much less than in corresponding periods previously. The writer is thoroughly convinced that more direct benefit will accrue to the general public, and also indirectly to the dentists, by a more thorough dissemination of dental knowledge, of not too technical character, but sufficiently concise to enable them to discriminate between good and inferior operations, than will obtain from so much science of which nobody but the profession and the few patients who are fortunate enough to be numbered among those who regularly care for their teeth by trusting the matter entirely to their dentist, know anything about.

This benefit is to the public by placing in their hands the knowledge that will prevent them from being imposed upon by unscrupulous operators, and lead them to seek dentists of unquestioned character and ability. To the dental profession, by leading a greater number to seek its services before it is too late to make the performance of good operations possible, and a higher appreciation of the possibilities within our bestowal, as well as to recognize the no less important fact that thorough work merits proper compensation.

Until this condition obtains, the dental profession is wasting valuable time and energy if directed alone along the line of more scientific operations, for a number of reasons, to but two of which I will take time to direct your attention. The first is, that the dental profession has progressed, in scientific dentistry, beyond

the understanding of the general public. We are out of harmony, we are out of balance; let us stop educating ourselves and bring the public up to hailing distance, at any rate; they are now only within hailing distance of the disreputable advertiser, who is standing between them and the men who by their untiring energy have established in the people the confidence in the dental profession, as a learned body, to which they are justly entitled; shattering that confidence, deceiving and fleecing them, and robbing the reputable practitioner of the compensation he is by his unselfish devotion entitled to receive.

The second reason is an outgrowth of the first, and consists essentially of the fact that because of this lack of discriminating knowledge on the part of the public all properly licensed dentists are entitled, one equally with another, to consideration as learned and skillful men, worthy of confidence by them, and they bestow their patronage, entirely according to their (the dentists') commonly understood, or advertised schedule of prices. This prevents in far too large measure the possibility of the conscientious dentist demanding and receiving proper compensation for operations of such character as the demands of such cavity preparation as referred to must have if conducted at a profit. Hence the assertion of the waste of time and energy and the inconsistency of radical cavity preparation with conditions existing to-day.

It is a significant fact that when we allow the mind to drift back over the last half-century of dental practice, we see many changes, and can but notice the extremes which have followed each other.

Fifty years ago the dental practice was confined almost wholly to men of extraordinary ingenuity, who became expertly skillful; they were the children of necessity, with comparatively few materials with which to work: evidenced by the fact that as a base for artificial teeth they had nothing but metal, no means of attaching the teeth to the plates except by soldering; the gold or silver plate and the continuous gum dentures were all they had to deal with, and that, too, with much less of the conveniences which we have to-day for accomplishing the same purpose. Their filling operations were confined almost entirely to gold, and that, moreover, of the non-cohesive variety. Their fits in metal plates were just as accurate and serviceable; and their fillings preserved the tooth as well, and some of them better, than ours of to-day. To be sure, they did not attempt to save as unfavorable cases as we do to-day, but their work was of the highest order.

It is argued that as their fees were much higher than is in evidence latterly, none but the rich could afford their services. That may be true, but I only mention these things to prove the assertion that extremes follow one another.

Vulcanite rubber came upon the scene, then we had the swing of the pendulum to the other side and everybody was a dentist, engaged in the practice of pulling teeth and inserting cheap artificial ones on vulcanite bases.

Cohesive gold was accidentally discovered, and then the profession began the restoration of contour, and they built monuments

of gold to their folly and shortsightedness; that was the skillful dentist again; then came a new prophet in the person of Dr. Flagg, and plastics were in evidence, and again the profession went to the other extreme, and plastered up everything that had a shell even of enamel to stick it into. The natural result of this was a whetting of the public appetite to avoid extracting. These teeth began to break down, the roots were good; crowning came into the arena, and only proved that it was a good thing, when extension to adjoining teeth, good or bad, was made and bridge-work was evolved. Then we had the extreme toward folly again in the attempt to cheapen it and popularize it by advising its use in almost any case with no regard whatever to the frailty or diseased conditions of one or both of the anchoring teeth.

Now we are swinging back to the attempt to prevent recurrence of decay and render less crowning necessary than has been done in the immediate past, by the fallacy that, if all margins are brought from between the teeth and the gingival margin cut below the gum, there will be no decay afterward and we will have reached perfection at last,—a fallacy, in the opinion of the writer, no less certain of ultimate demonstration than any of its predecessors. I am still of the opinion that there are enough intelligent and well-balanced minds in the rank and file of the profession to save it from such violent oscillations and finally bring it if not to rest in a straight line, to only slightly wavering ones, which the extremists can effect little toward increasing.

This desirable condition of equilibrium can only be accomplished by dispassionate appeals of a perfectly logical character, presented to the people in such a way that they can understand that some things are possible, but others not; when they can no longer be made to believe the senseless rantings of the unscrupulous advertiser, who boasts of impossible things at prices so low that they feel they ought to be ashamed of themselves if they do not have the whole family's teeth put in order at once. Dentistry will then have obtained the reputation of being what it deserves to be, a really scientific and learned profession, and its devotees ready and capable of rendering valuable services.

The members of the profession against whom your laws are valueless at present will fall in line, and render good service and charge professional fees, or will go out of business for the want of patronage. In either event the public will be benefited and the profession will be purged of its most damaging characteristic. The public will know what good dental service consists of, will demand it, can get it, will pay for it, and you will be the operator.

The subject of dental education for the public is entirely without the scope of this paper, and I leave that field to be more thoroughly reviewed by another paper on the program. Before passing, however, I want by way of emphasis to call attention to the problem which confronts the dental profession to-day with more force than anything yet taken up for serious consideration, viz, the protection of the public from unskillful, unscientific operations. This has been attempted by legislation, and you all know



how utterly that has failed, for while it may be proven that in most states none but graduates of reputable colleges can be licensed to practice, yet I will venture the assertion, and do not believe it can be successfully contradicted, that a larger percentage of unskillful and unscientific dental operations are being performed now, with the bulk of the practice in the hands of college graduates, than was performed twenty years ago, when it was the exception and not the rule to find the larger practices in the hands of graduates of dental colleges. I do not wish to be understood as advocating a return to the methods of those times, or deprecating the existence of the fact that now almost every dentist is a graduate; on the contrary I am heartily in favor of all of this advancement, if not I would not be here to-day. Then why do I make the above statement? you ask. Simply this: Twenty years ago the dental profession had not learned to be dishonest. People had no confidence in them, would not patronize until they had made the most thorough and painstaking inquiries about them, before they would have anything to do with anyone in the business. There was not so much skill and there were not so many things in which deception could be practiced. Now these things have all been changed; we have the implicit confidence of the people, and they feel safe in the supposed protection from imposition afforded by our state laws and the board of dental examiners. This confidence of the people has been established by the kind of dentists assembled here to-day. But unfortunately we do not represent even a considerable portion of the whole number engaged in the practice. Unscrupulous men possessed of a high order of skill and scientific attainments and seizing upon this fact of the confidence of the people, applying the merchandising idea to the conduct of their affairs, have sprung up among us and, throwing principle to the winds, have proceeded to deceive an unsuspecting and gullible public, thriving wonderfully both financially and socially, for a time, after which they change to pastures greener, their places are filled by another shift of operators, and we have the "same thing over again."

What will prevent this? Legislation will not do it. I answer, there is but one thing that will do it, viz, technical information on the subject among the people, emanating from some head that is recognized at once as both authoritative and disinterested. Put the public "on to" the deception. When this has been accomplished there will be some sense in and reason for thorough cavity preparation, and no one could be more enthusiastic in its defense than the writer. But under present conditions such thorough cavity preparation is inconsistent with the demands of the public: made so by the advertiser who takes advantage of his position to defame the reputable members of the profession and drag them down to his level of operative excellence, or force them by sheer necessity to a position of mediocrity, simply because they will not proclaim to the public the true state of the facts.

I have no doubt that some of you think to yourselves, even while I state these ideas, that you are as busy now as you could well

be; what is the use of putting forth energy in the matter of educating the public in regard to the strictly scientific side of dentistry. I do not doubt that you are busy, but you are not making as much money as you deserve to make if you are taking as much care in the preparation of cavities as we are being taught to take, unless you are an exception to the general run of dentists, in the matter of fees. If so, the exception but proves the rule. Again if you are doing as well in the distribution of your skill and the bestowal of your help to the human family as you would have us believe, then why have you been so enthusiastic in the furthering of strenuous dental laws the sole purpose of which is to prevent as far as possible the entrance of men to the practice of a noble calling in your locality?

It is *not* a fact that any considerable percentage of the dental profession to-day are in a fair way to gain a competency during the years a man can successfully practice the calling. Enter the offices of a majority of the dentists to-day and if he recognizes in you a person who knows what is what, he will apologize for his equipment; will not be in possession of many things essential and I think absolutely necessary for the proper performance of operations he should be ready to perform. Ask him why he does not have so and so, he will tell you, "Oh, my practice will not warrant the expenditure," or "I cannot afford it." This is not because there are too many dentists,—there are not enough dentists,—but there are not enough people who understand the matter, and they think a filling is a filling, a crown is a crown, and so on all through the list of possible dental procedures they may happen to be in need of. This condition is a reproach to the profession. To correct it there must be concerted action. When our patients demand more scientific operations, they will pay reasonable fees for them; the dentist will have to provide himself with more and better equipment; more men will attend our dental meetings; there will be more and better clinics and papers.

The demand for scientific dentistry will be logical, the ultimate end will be the weeding out of the profession all but those practitioners who are really fit, there will not be that reproach we are now so frequently confronted with, and the only legitimate reason for the existence of the dentist will be found in the fact that he is of inestimable value to the human race.

(To be continued.)

---

### NEW YORK ODONTOLOGICAL SOCIETY.

A REGULAR meeting of the New York Odontological Society was held on Tuesday evening, May 21, 1901, at the New York Academy of Medicine, 17 West Forty-third street, New York city. The president, Dr. W. W. Walker, occupied the chair, and called the meeting to order.

The president announced that he had appointed a committee to take appropriate action upon the death of Dr. McKellops, but owing

to some misunderstanding the committee was not yet ready to report.

Dr. Hodgson thereupon suggested that the committee be continued and that its report be made a special order for the next meeting. It having been stated that there would be no regular meeting of the society the following month, Dr. Hodgson suggested that a special meeting be called for the purpose, the president concurring, that a memorial meeting of the society be held at which others as well as members of the society should be invited to read short papers or speak upon the virtues of Dr. McKellops.

In supporting the resolution several of the members present spoke eulogistically of the character and lifework of Dr. McKellops and of the very powerful influence which his example as an operator and teacher had exerted upon the progress of dental practice in America. Dr. S. C. G. Watkins spoke of him as a man of great force and power and as a leader in the dental profession. The speaker also referred in fitting terms of appreciation to Dr. William H. Morgan, of Nashville, Tenn., whose death had recently occurred.

[For addresses at the McKellops memorial meeting see the DENTAL COSMOS for September, 1901, vol. xliii, p. 1042.]

#### INCIDENTS OF OFFICE PRACTICE.

Dr. A. R. EATON, of Elizabeth, N. J. I have a very interesting case which I wish to offer. I have a patient, a lady between thirty-five and forty years of age, on the palatal surface of whose left central incisor I discovered what appeared to be a slight indication of Riggs's disease. Further investigation disclosed a cavity running from above the enamel toward the apex of the root at least a quarter of an inch. This I packed with cotton, forcing the gum away, and subsequently made a more thorough examination. I found the pulp exposed with extensive absorption. I closed up the cavity, drilled into the palatal surface of the tooth about half way between the cutting edge and neck, applied nerve-paste, and destroyed the pulp through this opening. The question now arises as to what I shall do with this tooth. It is impossible to get at the cavity to put in a perfect filling. The only course which suggests itself to me is to extract the tooth, fill, and replace it. Does any one think it feasible?

Dr. Wm. JARVIE. If the cavity of decay started so far up beyond the gum line as Dr. Eaton describes, I am inclined to think it is more likely to be a cavity of absorption than decay. I never met with a cavity of decay so far above the gum line, but I have had quite a number of cases where there has been absorption, and where a large portion of the root has disappeared.

Dr. EATON. That seems to be the case here, too; a large part of it seems to be absorbed.

Dr. JARVIE. Of course, Dr. Eaton is much more familiar with the condition than we are, and he says he cannot fill it. I think he is just as capable as any of us, and if he cannot fill it I do not know who can tell him what to do. In one case which came to me I con-



sulted with Dr. Perry after I had prepared the gum in such a manner that I had fair access to the cavity, this taking some weeks to accomplish, by means of cotton and gum sandarac. As the pulp was exposed, it was destroyed, and the root filled. We both thought the best thing to do was to mold a block of gutta-percha to as near the shape of the cavity as possible, soften it with heat, and put it in place. I did that, and though it is not a sightly filling by any means, yet the tooth is doing good service to-day. Being on the palatal surface of the root, the unsightly appearance is of no importance. That procedure I would suggest to the doctor. I had another case some five or six years ago where there was a cavity of absorption on both the palatal and labial sides of the root of an upper right lateral. Treatment here was not successful; the two cavities almost met, and the crown broke off.

Dr. S. L. GOLDSMITH. Will the doctor state what method he used in destroying the pulp, the cavity being so far beyond the gum?

Dr. JARVIE. I used carbolic acid and arsenic. That is my usual method, and I do not think I departed from it. I had the gum pressed away so I could see the upper margin of the cavity.

Dr. J. F. P. HODSON. I have had with a right canine a similar experience,—an absorbed cavity on the palatal surface. There the appearance would be of small consequence. My method of procedure was to push away the gum with cotton and sandarac, as Dr. Jarvie mentioned, little by little, until I got only reasonable access, because it was so very far above the margin of the gum; then to fill the upper part of the cavity with amalgam. You can go so much farther with that than any other material, and make so much more definite a filling than with gutta-percha. The lower two-thirds I filled with gold; then I could get the rubber on, and tying far in under the gum I could get to the new margin of the cavity that I made. The gum healed nicely, and came down perfectly.

Dr. EATON. Did not the tooth discolor badly?

Dr. HODSON. Not at all. There was no reason to discolor. It was a dead tooth, and the interior was filled with oxyphosphate to make sure there would be no discoloration. The surface of the gold discolored, just as the surface of all gold does in contact with the amalgam, but there was no darkening of the tooth-surface.

Dr. L. C. LEROY. These cases seem to be quite common, although I think the one that I operated upon was rather unusual. The cavity which presented for my attention was on the lingual surface of the root of a lower incisor, and the procedure which I followed was to anesthetize the gum by ethyl chlorid, slit it open with a lance, and lay aside the folds with an old-fashioned round chisel. Then with the rubber dam held in place by a long cervical clamp good access to the cavity was obtained, and it was filled immediately with amalgam. I subsequently opened into the pulp-chamber through the crown of the tooth and removed the pulp.

The paper of the evening was then read by Dr. EBEN M. FLAGG, on the subject of "The Constitutional Origin of Dental Caries."

## ANNUAL CONVENTION OF THE SIXTH, SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE STATE OF NEW YORK.

(Continued from page 191.)

FIRST DAY.—*Afternoon Session* (continued).

Dr. B. S. HERT, Rochester, N. Y., then read the following paper:

### COCAIN IN PULP EXTIRPATION.

For many years the usual method of procedure for pulp-extirpation was to make an application of arsenic for a longer or shorter period, which by destroying the vitality of the pulp usually permitted the operation to be performed painlessly. There were, however, several serious objections to the use of this drug, and any method which avoids practically all of the objectionable features and is equally efficient in its results should be unhesitatingly adopted. Within the past few years cocain has been used more and more for anesthetizing the pulp preliminary to its extraction and so enabling the dentist to avoid the use of arsenic.

One of the first methods of using cocain was in cataphoresis, and although not always successful in my hands, it was sufficiently so to warrant my using it frequently for several years. Cataphoresis is probably still used for this purpose, but not to the extent it once was.

Another method is by the hypodermic injection of a solution of cocain into the pulp. This plan I have never tried, and so cannot speak regarding it from experience, but a number of prominent dentists appear to have obtained excellent results with it. The pulp is usually obtunded for a short distance to permit the insertion of the point of the needle, and several drops of the cocain solution are injected, when in a few minutes complete insensibility follows. For obtunding, various agents are used, such as nitrate of silver, cocain, carbolic acid, chloroform, etc. Cocain is also used by instillation to deaden the sensitiveness of the pulp. A crystal of cocain is placed at the exposure or the cavity is filled with a saturated solution of cocain and by means of a broach is gradually insinuated into the canal until the apex is reached, when the pulp can usually be removed without pain. Although giving good results in some hands, in mine they were so poor comparatively that I attempted it only a few times, and I now use it only as a last resort.

The last method to be mentioned is that of forcing cocain or a solution of cocain into the pulp under pressure. It is almost two years since I learned of this manner of using cocain, and for at least eighteen months I have used no arsenic whatever. My method of procedure is as follows: After applying the rubber dam and exposing the pulp, mix a small quantity of cocain hydrochlorate with water to form a saturated solution, and dip into it a small pledget of bibulous paper until it has absorbed all it can, and place this pledget over the exposure; then, filling the cavity with unvulcanized rubber, press on it with a burnisher or other suitable

instrument, when after a few seconds, in a great majority of cases, the pulp can be removed with a broach painlessly. Sometimes, especially in posterior teeth, before the pulp can be entirely removed more than one application may be necessary. In some cases the cocain produces no effect for some time, and occasionally not at all,—the latter, however, very rarely. Pulps that have been recently exposed seem to be the most susceptible, while those which have been exposed for a long time, those having pulp-stones, or to which arsenic has been applied, and sometimes pulps that have been capped for some time, are not quickly affected.

Instead of water, other media are sometimes used to dissolve the cocain, such as carbolic acid, chloroform, ether, formaldehyd, and alcohol alone, but water seems best for general use, although when it seemed slow to act I have used chloroform with apparently better results; when the latter does not produce the desired effect I resort to instillation. Regarding danger in the use of cocain I can say that I have never observed any systemic effect when using it, and in cataphoresis and pressure anesthesia, the amount used and that could possibly be absorbed is so small that the danger need not be considered. With instillation there would be more likelihood of trouble, while systemic manifestations have been produced from injecting cocain into the pulp.

#### *Discussion.*

Dr. L. MEISBURGER, Buffalo, said his experience with cocain in the extirpation of pulps had been limited, and it had been especially unsatisfactory in molars, for which he had returned to the use of arsenical applications. We have all of us used cocain, and in bicusps and incisors usually with good results. He would be glad to hear the experience of others as to its use in posterior teeth.

Dr. J. H. BEEBE, Rochester, had never been able to use cocain satisfactorily in dealing with pulps, but had found the old way of driving the nerve out far preferable to any other, and as he had had personal experience of its effects, he could bear witness as to the amount of suffering it caused. He had had the nerve of the upper left incisor in his own mouth killed in this way and the operation was almost absolutely painless. All know the method of operating; the nerve being exposed, a point of hickory is by a single quick blow driven into the canal, and being withdrawn the nerve is brought out with it. If necessary any remnants still in the canal can be at once removed by means of a sharp broach. The root then should immediately be filled. This was the operation as performed in his own mouth and as he had done it in his practice many times, and in no single instance had there been any ill effect from it. He fills the pulp-canal with a paste of cocain, thymolin, formaldehyd, and zinc oxid. This makes a paste about as thick as paint, and is soaked in a mass of silk fiber that has not been waxed, and with a broach is carried to the apex of the canal. The silk fiber is quite tough, so that if necessary the mass may be removed.

Dr. W. W. COON, Alfred, N. Y., had not succeeded with cocain in molars, nor very well in anterior teeth.



Dr. R. H. HOFHEINZ, Rochester, had found that a solution of cocain in chloroform acted more painlessly at the beginning than an aqueous solution. He thinks that failures with cocain may frequently occur because of the insufficient exposure of the pulp-tissue.

Dr. MEISBURGER did not suppose there was necessity for full exposure when cocain anesthesia was employed.

Dr. W. S. ROSE, Schenectady, had tried pressure anesthesia and at first did not get good results, but with the chloroform solution of the cocain and full exposure, his experience has been quite satisfactory.

Dr. F. W. PROSEUS, Rochester, said that in a case where the pulp was congested the pressure anesthesia would be painful, but if the tooth had not ached it will not cause any pain,—at least that had been his experience.

Dr. HERT, in closing the discussion, said that while he knew that the method of pressure anesthesia, as described in his paper, was not new, yet he knew that it was unknown to many, and he felt it was worthy of the free discussion such as had been brought out by the paper. In the anterior teeth he had found it always successful. There is a little pain at first, but in a few moments the nerve can be removed, and quite without sensation.

The subject was passed, and Dr. W. C. BARRETT, Buffalo, N. Y., addressed the convention in substance as follows, on the subject of

#### SOME EMBARRASSING EDUCATIONAL PROBLEMS.

It is a long story fully to consider the organization of the dental profession. Dentistry as an art has a history that extends back into the remote past. In the museum of the college in Buffalo we have specimens of dental work done more than 2600 years ago, and without doubt dental art is very much older than that. But this dentistry was rude and empirical. It was wholly mechanical, and there was in it no promise even of the dentistry of to-day. Herodotus speaks of the dentistry of the Egyptians as being a branch of medicine. In what it consisted we have no special knowledge, but as a branch of science medical dentistry seems to have made little if any progress until near the beginning of the nineteenth century. Chapin A. Harris and his *confrères* were the founders of the modern profession of dentistry. Until their time it existed only as an art, and was followed by few men of learning or of standing in their communities, and they were usually jealous of their fellows and guarded their methods, their instruments, and every rule of their practice from the knowledge of all other practitioners. Their ideas were therefore heterogeneous, no two having a common method, nor was there any accessible store of knowledge or recorded experience upon which they could base their practice.

It was the aim of Harris and his *confrères* to bring about a union of the best men in dental practice, and to arrange the heterogeneous methods and hypotheses, and fashion them into an organized and accepted practice. Primarily, dentistry was to their minds a part of medicine which must be developed in dependence upon and in con-

nection with that profession. They therefore made application to the University of Maryland for the establishment of a dental chair in the medical school of that institution. This application was denied because the profession could not accept as a part of any medical curriculum that which was essentially mechanical in character; they were therefore forced to establish a separate school. This brought about the practical dissociation of dentistry and medicine, and gave rise to the distinctive dental degree of D.D.S.

The school thus established was a dental school entirely,—all of the professors were dentists, except the men who taught chemistry and anatomy. One thing they did which gave to the American system of organization a distinctive character of its own and differentiated it from that which was subsequently established in other countries; they taught not only theoretic and therapeutic dentistry, but operative and prosthetic dentistry as well, so that a student could be completely equipped for all of the branches of dental practice without any instruction outside the school. This feature has been copied in all American dental schools. All have clinics for practically instructing in the operative and mechanical departments for teaching prosthetics. If this had not been so established, dental practice would have been divided as is ophthalmology to-day. That is distinctly a branch of medicine, and is practiced under the medical degree, but, like dentistry, it has a prosthetic department,—mechanical, though not to the same extent. The practical part is pursued by the optician who grinds and prepares the glasses which correct or assist vision, etc., and who needs no degree or license to practice; while the medical and surgical part is cared for by the ophthalmologist, who is a professional man and under whose general direction the optician works. So dentistry, under such a form of organization, would have been divided into operative and prosthetic departments, the latter being carried on by simple mechanics who would not have been required to possess a degree or license to pursue their business.

If the study of American dentistry had been primarily taught in the medical schools, it would not have possessed the characteristics of to-day. But dental schools being separately established and making themselves responsible for every branch of dental practice, prosthetic dentistry became an integral part of our system, is taught with the medical branches, and thus is made as respectable as any other branch of practice. European schools, on the other hand, are medical schools, and they can have no cognizance of either operative work or prosthetics. They were first established in hospitals, as are our medical schools, and none but medical studies formed a part of the curriculum. But operative and prosthetic conservative procedures formed so essential a portion of dental practice that they could not be ignored; and some provision must be made for instruction in them. As medicine could give them no place in its course of study, those branches were degraded by being relegated to an irresponsible and perhaps ignorant and unprofessional mechanic, the student being indentured to him as if he were to be a shoemaker or blacksmith or tailor. In America, on the other hand,

clinical instruction was from the outset provided for in the schools. Where the dental course is nothing more than a branch of instruction in the medical schools, the mechanical part may be entirely ignored, and must be acquired by a system of apprenticeship with a practicing dentist who accepts pupils for the sake of the fees they pay him and for the sake of the work he can get out of them.

These distinctive features have made the practice of dentistry in Europe and America quite different. In Europe dental graduates are as well equipped as to theory, if not better, than the graduates of American colleges, but practically they are far inferior. In Europe the preliminary requirements for the practice of dentistry are usually below those of this state at least, except in Austria, where a man must take the university degree before he can be a dentist. A young man, before he can practice dentistry in Austria, must spend twelve years in the gymnasium, four years in the university, and four years in the study of medicine, before being allowed to practice; and then he is not fitted to practice dentistry, for he may know nothing of the practical.

A young man who had for twenty-two years pursued these various courses of study came to Buffalo to "finish up," thinking he would get all he needed in a few months. He had the best-stored mind but the most ignorant hand I ever knew. He had absolutely no idea of the proper manner in which to hold the simplest instrument. His hand was that of a woman, and his method of driving a nail or whittling a stick was about analogous to that of a young girl. He was twenty-seven years old, and his hand was absolutely untrained. At first it seemed impossible to do anything for him, but by careful manual and digital training through three full years he was finally taught to be a fair operator.

You will probably say that such a student should not be accepted. But dental schools cannot always discriminate as to whom they will receive, nor can anyone judge what chance a student has for success. No school can refuse to allow a student who has matriculated and obeys the rules and regulations to finish his course, even though the faculty were a unit in deciding that he never could succeed as a dentist. We tried it once, and declined to receive a student for the dental class who had in his freshman year plainly indicated the entire lack of constructive ability. He appealed to the law, and the chancellor of the university, a lawyer of national fame, when we submitted the question to him, informed us that the law would not sustain us, and we must receive the man if he subjected himself to our regulations.

On the other hand the schools cannot guarantee to make an experienced dentist of every student who completes the course and receives the degree. It can give him the opportunities to fit himself for practice; but if he does not or cannot take advantage of these opportunities, it is not the fault of the school.

Dental schools have persevered in a constantly broadening course, and they have done this of their own volition. At first it was a two years' course of terms of six months, and five years' previous practice was received as equivalent to one term. Next



it was three years; then the term was lengthened to seven months; and now every student has to be in attendance within ten days of the beginning of each term, and the curriculum has been so extended that it has been found impossible to crowd it into three years, and the course has been extended to four years.

We as dentists have no reason to blush for our profession. It is young,—has scarcely emerged from the formative period,—but its standards are as high, its requirements are as exacting, its culture as broad, and its code of ethics as lofty, as those of any other of the learned professions; while we can confidently claim that our rate of advancement is greater than that of any branch of law, medicine, or divinity.

#### *Evening Session.*

The session was called to order at 8.30 P.M., and the convention listened to a paper on "Artificial Illumination as a Science and an Art," by Mr. E. L. Elliott, Newark, Ohio.

Mr. Elliott's subject is of course one of universal interest, and it was handled in a masterly and interesting way, treating on the history of artificial illumination from the time when the savage used a blazing fagot to enable him to see his way through the forests, down to these days of electric lights and Welsbach burners. It included the theory of light, the construction of the human eye, the advantages and disadvantages of different illuminants, and especially the science which might be, but so rarely has been called upon to arrange the lighting of dwellings and other buildings to get the best illumination in such a way as to prove least detrimental to the eyes and most artistic in effect. His conclusions were that the ideal way of illuminating an apartment would be by means of a diffused light from such a source as a number of incandescent lamps placed over a reflector, out of sight themselves, the light being diffused through the room by light-colored or preferably white walls and ceilings. To meet the problem in this way is far too expensive in most cases. Failing this, he recommended the device called the holophane shade, constructed upon scientific principles so as to break up the light from an ordinary gas-burner, a Welsbach burner, or an incandescent electric light, softening it and also throwing it in the direction where it will be most useful.

#### SECOND DAY.

The morning session was devoted to clinics.

#### *Afternoon Session.*

The convention was called to order at 2.30 P.M., and a paper was read by Dr. W. J. ROE, entitled "Nitrous Oxid and Oxygen Anesthesia."\*

#### *Discussion.*

S. R. SNOW, M.D., Rochester, said they were indebted to Dr. Roe for this most excellent *résumé* of the history and use of nitrous oxid and oxygen. Personally, he had not had the experience that

---

\*Printed in full at page 209 of this issue.

Dr. Roe had had, and in this day of scientific research it would be foolish to say that anything would not take place only because it had not done so in one man's experience, but looking on the administration of nitrous oxid and oxygen as practiced to-day, it does not appear that it will ever take the place, as an anesthetic, of ether and chloroform. The dangers in the use of ether and chloroform arise in a large majority of cases from the inexperience of those who administer them. As ordinarily handled in hospitals it is usually a junior, or more frequently a student, to whom the administration of the anesthetic is entrusted while the more experienced surgeon performs the operation. A thorough preliminary examination of the patient should be insisted upon in every case, except in emergencies. The only case of a death from an anesthetic which had occurred in his hospital experience of ten years was such an emergency case, a negro who died immediately when the anesthetic was given him. An autopsy revealed that he had a weak heart and his lungs were in a bad condition, but of course this was found out too late, as no examination had been made until the autopsy.

He was convinced that the anesthesia of nitrous oxid is produced chiefly by asphyxia. The advocates of the administration of oxygen with the nitrous oxid claim the best results come from about six per cent. of oxygen, and this would simply furnish enough oxygen to overcome the asphyxiation.

Ether and chloroform are more convenient and simple to carry and to administer than nitrous oxid, requiring no complicated apparatus to transport them nor in their administration.

The greatest danger from ether comes after the operation. In nitrous oxid or nitrous oxid and oxygen the danger in a surgical operation would arise from the difficulty of keeping the patient so completely anesthetized as to avoid the possibility of sudden motion, which in many cases would perhaps cause a wound of some vital organ. In simple operations it does well enough, but for an example, in an operation for appendicitis or an abdominal section, when the great danger is from pus getting into the bowels, the danger with nitrous oxid and oxygen would be very serious.

He prefers chloroform to any other anesthetic and believes that if the chloroform is pure and the anesthetist is careful and skillful the danger is very small indeed. He had used nitrous oxid sometimes to induce anesthesia and then changed to chloroform, but there was always a danger with this method that the patient would almost or quite come from under the influence of the nitrous oxid before the chloroform took effect, and so he had discontinued its use. The fact that nitrous oxid and oxygen was much more expensive than either ether or chloroform, though that would hardly be considered either in private or hospital practice if its advantages were demonstrated, was nevertheless a factor of considerable importance, especially in hospital practice where there are many operations.

Concluding, Dr. Snow thanked Dr. Roe for the preparation of his important paper and the convention for the opportunity given him to take part in its discussion.

Dr. H. B. HUVER, Buffalo, said that he considered it a great privilege to have listened to Dr. Roe's excellent paper. As to the plan of operating under anesthesia produced by subarachnoid injections of cocain, he thought it already was a thing of the past. The idea of a patient sitting up and looking at his own intestines while an operation for appendicitis was going on was almost too shocking for anyone to contemplate. Nitrous oxid and ether made a very good combination, the nitrous oxid first to induce the anesthesia without the struggles usually accompanying the inhalation of ether, then the latter to maintain the anesthesia. This method was very generally used in the hospitals in Buffalo.

The reason the medical profession do not succeed with nitrous oxid and oxygen is because medical men as a rule know but little of the use of nitrous oxid. The position should be slightly raised and the patient instructed to breathe naturally, thus avoiding the choking effect produced by an extra-deep inhalation of the gas.

He had used ether and nitrous oxid, but did not favor the use of chloroform with nitrous oxid. He mentioned Schleich's new method of using chloroform at the boiling-point. The boiling-point of chloroform is  $65^{\circ}$ , of ether  $34^{\circ}$ , centigrade. This shows why less chloroform is needed than ether.

He had attempted in the morning to give a clinic showing the use of nitrous oxid and oxygen, but it was a wretched failure owing to an unfit patient and the noise in the room. Another case of failure he charged to the apparatus. It was an alcoholic case and the patient did not know he was to take the anesthetic. We had to fight him to keep him on the table, and before anesthesia was complete the patient was as blue as the gas-bag. During the operation the bag burst out; fortunately before the anesthesia passed off the operation was finished. Goldan and Hewitt, however, have been very successful with this method. He believed with Dr. Snow that the use of the oxygen is simply to overcome the asphyxial effect of the nitrous oxid. This condition of asphyxia affects every organ of the body, and if not relieved will cause the heart to stop beating. Chloroform in the hands of an anesthetist who knows his business is the best of all anesthetics, but in his opinion only a specialist should administer any anesthetic, as the average general practitioner of medicine knows no more about its administration than does the average dentist.

He reported two cases of operations; one was a woman forty-two years old, who was in a condition that under ordinary circumstances would have forbidden the use of any anesthetic, had a hypertrophic heart, a dilated heart, etc., but the case was one of a desperate emergency, and as she could not take either chloroform or ether, we arranged to give her nitrous oxid and oxygen; tracheotomy was performed and the tube inserted and the gases given through the tracheotomy tube. During the operation the patient began to move, so the oxygen was turned off and the nitrous oxid given alone, but, as it was still not satisfactory, ether was substituted. A dangerous weakening of the heart action followed,



and strychnin was injected to overcome this tendency. The ether was discarded and nitrous oxid again administered, and the operation, which in all required one hour and ten minutes, was finished. The patient, who had expected to die on the operating-table, recovered nicely, but had died since from heart failure.

The other case was of a man of fifty years of age; had had kidney trouble and valvular lesions of the heart. He weighed about 250 pounds. He had suffered an accident and it was necessary to take the arm off. This operation was successful and within two minutes the man recovered from the anesthetic, but died two weeks later.

In dental practice he had used nitrous oxid and oxygen in about sixty cases and then abandoned it, concluding that it had no advantages over the nitrous oxid alone.

Dr. HOFHEINZ asked Dr. Roe if the anesthesia with nitrous oxid and oxygen was as complete as chloroform anesthesia for long operations; also, How long did it take to produce complete anesthesia? and Was the nitrous oxid given continually in long operations? Many writers claim that nitrous oxid and oxygen do not produce asphyxiation; if this is the case it removes the only danger from nitrous oxid, and he believed it would be largely used by dentists working on sensitive dentin. He agreed that no dentist should ever administer an anesthetic; moreover, neither a dentist nor a physician should anesthetize a patient except in the presence of a third party. He asked Dr. Roe if he had had any experience with chloroform.

Dr. C. S. BUTLER was sorry that Dr. Roe had not gone more particularly into the different physiological impressions of the several anesthetics. If, for instance, in minor surgery we wish only to impress the intelligence of the patient, nitrous oxid and oxygen he thought would be sufficient, but did not believe that they could be depended upon to produce that profound anesthesia which will keep a patient as quiet as necessary in important surgical operations. If any combination of nitrous oxid can produce this complete anesthesia the use of the gas will certainly be much increased.

Dr. L. MEISBURGER, Buffalo, took issue with Dr. Hofheinz about dentists administering anesthetics. He thought they were fully competent to administer anesthetics, because as students they usually are in frequent attendance in the hospital for the purpose of getting the necessary knowledge.

Dr. C. S. STANTON, of Buffalo, said if anyone had a right to administer anesthetics, certainly dentists had.

Dr. HOFHEINZ replied that he had not said that dentists should not give anesthetics, but that neither they nor medical men should do so without the presence of a third person.

Dr. ESCHELMAN was surprised that Dr. Stanton made the claim that dentists were eminently fitted to give anesthetics. The reason the dentist should not is because he is not fitted to adequately examine the patient to determine whether the heart, the kidneys, and other organs are in a good condition so as to make it safe, and then he should also know the different effects of the various anes-

thetics on these organs and the remedies in case of a mishap. Besides all this there were risks of a very different kind that made it unsafe to anesthetize any patient without the presence of another person.

Dr. HUVER believed firmly that nitrous oxid and chloroform should never be given together, because of the physiological action of the chloroform. He would be glad to believe that the nitrous oxid anesthesia was not simply asphyxia, but had not been convinced yet. In the case of tracheotomy where he had to give the ether, the nitrous oxid had failed because of the failure of the inhaling-tube to fit the tracheotomy tube.

Dr. ROE said he thanked the committee for the invitation they had given him to address the convention, though at first he had felt considerable hesitancy as to accepting it because he felt that he had nothing especially novel or original to bring before them, but presented the facts largely on the authority of others. In regard to the question of dentists as anesthetists, he felt that anesthetics undoubtedly belonged to that profession, and they are taking hold of the combination of nitrous oxid and oxygen and using it largely. There are to-day two hundred and forty-five of this apparatus in their hands in this country. Personally, he believes it will fill a large field. The questions asked he thought were all answered in the paper except the one about chloretone. He had used it, found it valuable, and regretted that he had not included it in his paper.

On motion of Dr. Hofheinz, a vote of thanks was extended Dr. Roe for the paper.

Dr. C. W. STANTON then read a paper entitled

#### THE DENTAL SOCIETY OF THE STATE OF NEW YORK—ITS PAST; ITS FUTURE.

This was an historical sketch of the progress of dental societies in the state, and especially of the foundation, progress, and present condition of the New York State Society. He is not satisfied that the society is doing the work it should, and believes changes should be made in its constitution and management which would bring about a large increase in membership and attendance at its meetings. He presented figures and facts that made comparison between the New York State Dental Society and other state societies very unfavorable, in his view, to the former, and hoped that those present would take into consideration measures calculated to work something like a revolution in the New York State Society.

The discussion was animated, but the general opinion appeared to be that the matter had better be brought before the meeting of the state society, where appropriate action, if thought necessary, could be taken.

The subject being passed, a paper was read by Dr. H. A. PULLEN, entitled "Conservative Treatment in Orthodontia."\*

#### SECOND DAY—*Evening Session.*

The convention was called to order at 8 P.M., and on motion the

---

\*Printed in full at page 225 of this issue.

discussion of Dr. Pullen's paper on "Conservative Treatment in Orthodontia" was taken up.

Dr. T. ESCHELMAN, Buffalo, said that orthodontia was one of the deepest subjects in dental practice, requiring more careful study, and involving more chances of failure, than any other. In looking over the *Items of Interest* for November he was glad to see that there had been a society of Orthodontists organized, and he hoped that the promised united work in this field would lead to fuller knowledge and improved methods.

He agrees with Dr. Pullen that occlusion is the basis of all orthodontia, and as well of all prosthetic dentistry. Dr. Bonwill's studies in occlusion and the movements of the jaws have been very valuable, and they furnish us with knowledge which will be of constant use both in orthodontia and in the making of plates.

Almost all regulations can be done without extraction, and it is especially desirable not to extract the canines, as the loss of these teeth almost always produces deformity of the face. The canine being a long tooth, its absence produces a depression extending from the base of the nose to the lip. The careful study of the face of each patient should precede any attempt at regulation; and not only this, but some study of the teeth of the patient's parents where possible. It occurs sometimes that part of the teeth are inherited from one parent and the rest from the other. He had a case in mind of a patient whose anterior teeth were apparently inherited from the father, and the posterior teeth from the mother. He tried to regulate these teeth according to the father's mouth, and the consequence was that the irregularity returned. If he had tried to build on the mother's type there would have been no return. When dentists exhibit or write about irregularities for dental meetings, they usually exhibit casts of the mouth, before and after treatment, but it would in many cases be an advantage if we could be shown casts taken several years after, as well. The latter frequently would not be so flattering in the tale they would tell as is the case immediately after the completion of the operation.

One frequent cause of irregularities is the retention of the deciduous teeth past the time when the space they occupy is needed for the permanent set. He was strongly opposed to the extraction of the first molars, especially before the eruption of the permanent canines and incisors. The first molars act as props to keep the jaws open till the permanent teeth come in; they constitute the base of the arch of the jaw, and their removal disarranges the arch. The deciduous teeth should not, however, be kept in the mouth after the time when the permanent teeth are due; they cannot then influence the development of the jaws and alveolar process, as they cannot exert any pressure beyond their own width; besides, their roots are undergoing absorption or atrophy, and therefore cannot stimulate growth in surrounding parts. The deciduous teeth have nothing to do with the development of the alveolar process of the permanent teeth. The alveolar process during a long life is lost twice, once with the disappearance of the deciduous teeth, and again when the permanent teeth are lost.



Tomes says the anterior jaw of a child is as large at about seven or eight years as it ever will be. This can be proven by fitting a child's jaw over that from an adult. The size from the first molar forward will be found the same, the after extension is from that point backward. The second and third molars make room for themselves as they appear, and this room must be made by lengthening the jaw back of the first molar. Another reason is that bone always grows from cartilage. In the jaw of a child, the symphyses unite at about sixteen to eighteen months of its age, and after that there is no cartilage in the front part to form new bone.

Dr. WEBSTER, Toronto, said that nearly all dentists were agreed that the anterior teeth should never be extracted in regulating, but too many were willing to sacrifice bicuspid to make room to correct irregularities. It is hard to conceive a case where such a sacrifice could be justified, and the consequences are usually most lamentable. He had a case in mind where both bicuspids on each side were extracted, with the result that the upper incisors occlude inside the lower ones, and the fourteen-year-old patient really looks older than her mother. If more attention were paid to occlusion as governing regulation, such mistakes would not be made.

Dr. PULLEN, in closing the discussion, said it is true that the influence of heredity will sometimes knock out our best regulations, but we can sometimes overcome it by having the patient wear retention apparatus until the teeth have become permanent in their new positions. The tendency of the teeth to revert to the wrong position is one of the hardest problems of the whole subject, and the operator must not lose sight of this tendency nor cease to combat it until he is sure that the teeth will not move back. In cases of heredity they require a longer wearing of the retention appliances than in any other cases.

Mouth-breathing is the cause of very many irregularities. In his practice, all such are referred to the rhinologist first, and he refuses to undertake the correction of the irregularities until the rhinologist pronounces the post-nasal condition good. The effect of mouth-breathing is to cause the elongation of the molars because of the constantly open mouth. This of course produces an open bite, and the upper lip, relieved of tension, is shortened. The effect is quite pronounced, because as pressure is removed from the anterior teeth the jaw is narrowed, the occlusion destroyed, and in consequence nutrition is interfered with. In all mouth-breathers adenoid vegetations are found in the post-nasal cavities, and these must be removed before any successful operation for correction of the irregularities can succeed.

Regarding the mechanical influence of the deciduous teeth, he is firmly convinced of its importance. One of the models which he had exhibited showed a non-development of the jaw, because of their premature loss. If the full deciduous set could have been preserved until the permanent were ready to erupt, the jaw would have developed sufficiently large to have accommodated them. As to the facial line and its relation to the incisor teeth, he would speak at some future time. He believed with Dr. Webster that the facial

lines should be very carefully studied by the dentist who undertakes to correct a case of irregularity.

(To be continued.)

### ALUMNI ASSOCIATION, NEW YORK COLLEGE OF DENTISTRY.

At the annual meeting of the Alumni Association of the New York College of Dentistry, held January 15, 1902, at the Hotel Majestic, the following officers were elected to serve during the ensuing year (all being of New York city): John I. Hart, president; Edward Fox, first vice-president; H. R. Armstrong, second vice-president; J. Ostram Taylor, secretary; F. A. Chicherio, treasurer; F. J. McLaren, curator. Executive committee—W. C. Deane, chairman, Finn Fossume, B. C. Nash.

J. OSTRAM TAYLOR, *Secretary*.

### NEW ENGLAND ALUMNI ASSOCIATION OF THE PHILADELPHIA DENTAL COLLEGE.

THE second meeting and first annual banquet of the New England Alumni Association of the Philadelphia Dental College was held in the banquet room at the Massasoit House, Springfield, Mass., Thursday evening, October 31, 1901, at the close of the Northeastern Dental Association meeting.

This organization is the outgrowth of a preliminary meeting held at last year's convention of the association in Providence, and plans made at that meeting were perfected at the present convention, when permanent organization was effected, including the adoption of a constitution and by-laws and election of officers.

The meeting was called to order by Dr. James McManus of Hartford, Conn., the oldest graduate present, as the first president of the Northeastern Dental Association and the first vice-president of the National Dental Association. He was chosen president at the preliminary meeting last year, and conducted the meeting until the new president, who is his son, took his place.

The officers elected were: Henry McManus, Hartford, Conn., president; F. W. Bisbee, Camden, Me., vice-president; D. W. Johnston, New Haven, Conn., secretary and treasurer. Executive committee—E. B. Abbey, Hartford, Conn.; A. J. Flanagan, Springfield, Conn.; W. S. Payson, Castine, Me.; H. S. Mackay, N. Conway, N. H.; C. F. Meacham, Bellows Falls, Vt.; L. A. Wilbur, Pawtucket, R. I.

Short addresses were made by Prof. H. C. Boenning, of the Philadelphia Dental College; Drs. A. J. Flanagan, Springfield, Mass.; Strang, Bridgeport, Conn.; Hatch, Winsted, Conn.; Pratt, East Hartford, Conn.

It is the intention of the members to hold the meeting and banquet annually in connection with the meeting of the Northeastern Dental Association.

The charter members represent about one-tenth of the whole number of graduates of the college in New England.

## SOUTHERN DENTAL SOCIETY OF NEW JERSEY.

## ELECTION OF OFFICERS.

THE society has elected the following officers for the year 1902: C. P. Tuttle, president; J. G. Halsey, vice-president; J. Fred Smith, recording secretary; T. Victor Smith, corresponding secretary; Mary A. Morrison, treasurer. Executive committee—A. Irwin, J. E. Duffield, A. B. Dewees, W. A. Jaquette, W. W. Crate, O. E. Peck.

---

## CENTRAL DENTAL ASSOCIATION OF NORTHERN NEW JERSEY.

At the annual meeting of the Central Dental Association of Northern New Jersey, held on Saturday evening, February 15, 1902, the election of officers resulted as follows: J. W. Fisher, East Orange, president; Wm. H. Pruden, Paterson, vice-president; Frederick W. Stevens, Newark, secretary; Chas. A. Meeker, Newark, treasurer. Executive committee—C. F. Alfred Hane, C. W. Hoblitzell, Jersey City; F. Edsall Riley, W. Moore Gould, H. P. Marshall, Newark.

FREDERICK W. STEVENS, *Sec'y.*

---

## UNIVERSITY OF PENNSYLVANIA, DEPARTMENT OF DENTISTRY.

## DENTAL DEGREES CONFERRED.

At a meeting of the University Council, held in the college chapel of the University of Pennsylvania, February 5, 1902, the degree of Doctor of Dental Surgery was conferred by Vice-Provost Edgar F. Smith upon Francis Ashley Faught, of Philadelphia, Pa., and Warren Cleveland Lummis, of Bridgeton, N. J. These graduates had successfully passed the final examinations at the close of the preceding session, but being then under the legal age the conferring of the degree upon them was withheld until the required age limit had been attained.

EDWARD C. KIRK, *Dean.*

---

## PHILADELPHIA ACADEMY OF SURGERY.

## AWARD OF THE GROSS PRIZE OF ONE THOUSAND DOLLARS.

THE Philadelphia Academy of Surgery, as trustees of the Samuel D. Gross prize for original research in surgery, of one thousand dollars, have awarded this prize, after six years' interval, to Dr. Robert H. M. Dawbarn, of New York city.

The treatise which won the competition was entitled "The Treatment of Certain Malignant Growths by Excision of Both External Carotids." Upon this topic Dr. Dawbarn has worked, as opportunity served, for seven years past. The essay when published will



contain the histories, with pathologists' report in each instance confirming diagnosis of malignancy and specifying its variety, of forty carotid extirpations by the author himself, and as many additional by about a dozen other surgeons. At least two of these are members of the Philadelphia Academy of Surgery.

By the terms of Dr. Gross's bequest, the prize essay must be published in book form, and a copy should be deposited in the Samuel D. Gross Library of the Philadelphia Academy of Surgery.

---

### INSTITUTE OF DENTAL PEDAGOGICS.

At the close of the ninth annual meeting of the Institute of Dental Pedagogics, held at Pittsburg, Pa., December 31, 1901, and January 1 and 2, 1902, the following officers were elected for the ensuing year: Hart J. Goslee, Chicago, Ill., president; J. D. Patterson, Kansas City, Mo., vice-president. Executive board—W. Earl Willmott, Toronto, Canada; W. H. Whitslar, Cleveland, Ohio; D. R. Stubblefield, Nashville, Tenn. Master of exhibits—D. M. Cattell, Chicago, Ill. H. B. Tileston, No. 314 Equitable Bldg., Louisville, Ky., secretary and treasurer. D. R. Stubblefield was elected on the executive board for the term of three years, to succeed D. M. Cattell, term expired.

It was decided to hold the next meeting in Chicago, during the holidays.

H. B. TILESTON, *Sec'y.*

---

### DISTRICT OF COLUMBIA DENTAL SOCIETY.

At the annual meeting of the District of Columbia Dental Society at Washington, D. C., the following officers were elected for 1902: Jno. London, president; Llewellyn F. Davis, vice-president; Wm. D. Monroe, recording secretary; Wms. S. Donnally, corresponding secretary; M. F. Finley, treasurer; H. B. Noble, librarian.

---

## DENTAL SOCIETY ANNOUNCEMENTS.

---

### SECOND ITALIAN NATIONAL ODONTOLOGICAL CONGRESS.

[THE following announcement regarding this meeting, to be held in May, 1902, has been issued by the committee of organization:]

DEAR SIR,—In execution of the mandate received from the First Italian National Odontological Congress, held at Naples in July, 1900, in which it was determined that the second congress should be held in Rome in 1902, and that the committee of organization should consist of the dentists of Rome present at the said first congress, the same have met together and decided that it take place next May, in the Policlinico, in Rome.

You are urgently requested to send in your adhesion, sending a simple

visiting card to the provisional office of the committee in the house of Comm. Proia, via Condotti 48, Rome.

Further, you are kindly requested to send in soon to the same address the titles of any communications that you intend to make, either on scientific subjects or on matters of prosthesis, etc., as the committee has to prepare the program to be forwarded to all who wish to attend.

THE COMMITTEE OF ORGANIZATION.

ROME, December 5, 1901.

## TEXAS STATE DENTAL ASSOCIATION.

THE annual meeting of the Texas State Dental Association will be held in the city of Waco, May 13, 14, and 15, 1902.

The executive committee promises a fine program, and this meeting is expected to be the largest in the history of the association.

BUSH JONES, *Sec'y*,  
Dallas, Tex.

## NEW YORK STATE DENTAL SOCIETY.

THE thirty-fourth annual meeting of the New York State Dental Society will be held Wednesday and Thursday, May 14 and 15, 1902, in the assembly hall, Hotel Ten-Eyck, Albany, N. Y.

The following essayists will present papers on subjects to be announced: S. S. Stowell, D.D.S., Pittsfield, Mass.; R. H. Hofheinz, D.D.S., Rochester, N. Y.; W. V. B. Ames, D.D.S., Chicago, Ill.; Leo Greenbaum, D.D.S., Philadelphia, Pa.; J. Head, D.D.S., Philadelphia, Pa.; A. E. Webster, M.D., D.D.S., L.D.S., Toronto, Ont.; W. H. G. Logan, D.D.S., Chicago, Ill.; H. D. Hatch, D.D.S., New York; A. R. Cooke, D.D.S., Syracuse, N. Y.

Members of the profession are cordially invited to be present. Headquarters, Hotel Ten-Eyck. (Special rates, \$3.50 per day.)

JOHN I. HART, D.D.S., *President*,  
W. A. WHITE, D.D.S., *Sec'y*,  
Phelps, N. Y.

## ILLINOIS STATE DENTAL SOCIETY.

### COMMITTEE ON ART AND INVENTION.

THE Committee on Art and Invention of the Illinois State Dental Society hereby invites and solicits a contribution of anything new in the way of appliances and inventions, designed during the past year, which will be of interest to the profession in general.

Everything submitted should be sent directly to the undersigned with detailed description of its use and application by April 1st, in order that it may receive proper classification and consideration in the presentation of the annual report at the coming meeting in Springfield, May 13-16, 1902.

The committee will care for and return each article submitted, but reserves the right to reject any which in their opinion may not be of practical value.

HART J. GOSLEE, *Chairman*,  
580 Madison st., Chicago, Ill.

### VERMONT STATE DENTAL SOCIETY.

THE twenty-sixth annual meeting of the Vermont State Dental Society will be held at Hotel Berwick, Rutland, March 19, 20, and 21, 1902.

THOMAS MOUND, *Sec'y*,  
Rutland, Vt.

---

### SEVENTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE thirty-fourth annual meeting of the Seventh District Dental Society of the State of New York will be held at the Osburn House, Rochester, New York, April 8 and 9, 1902. A number of valuable papers will be read and a great many clinics given. All members of the profession are cordially invited.

F. MESSERSCHMITT, *Chairman*,  
138 Main st., East Rochester, N. Y.

---

### CONNECTICUT STATE DENTAL ASSOCIATION.

THE thirty-eighth annual meeting of the Connecticut State Dental Association will be held at Hartford on Tuesday and Wednesday, May 20 and 21, 1902. Every effort is being made to have a large and interesting meeting. At last year's convention over two hundred were present, and a larger attendance is expected this year.

Exhibitors desiring space may communicate with the chairman of the executive committee, Geo. O. McLean, of Hartford, Conn.

FREDERICK HINDSLEY, *Sec'y*,  
Bridgeport, Conn.

---

### IOWA STATE DENTAL SOCIETY.

THE annual meeting of the Iowa State Dental Society will be held in Des Moines, May 6, 7, 8, and 9, 1902.

All reputable members of the profession are cordially invited to be present.

I. C. BROWNLIE, *Sec'y*.

---

### MISSOURI STATE DENTAL ASSOCIATION.

THE thirty-eighth annual meeting of the Missouri State Dental Association will be held at Jefferson City, Mo., May 21, 22, and 23, 1902. The business meetings of the association will be held in the legislative hall of the State Capitol. The clinics being held in the State penitentiary insures an abundance of clinical material. The papers to be read before the association are of a most interesting character. The meeting bids fair to be one of the best ever held in the state. It is certainly to be hoped that with a change in the time of holding the meeting, and many other attractive features, the attendance will be all that could be desired.

J. H. KENNERLY, *Cor. Sec'y*.



EDITORIAL.

---

## CONSTITUTIONALITY OF THE PENNSYLVANIA DENTAL LAW.

THE present law, enacted July 9, 1897, regulating the practice of dentistry in Pennsylvania has on several occasions been subjected to the test of judicial analysis and judgment where violators have resisted the enforcement of its provisions in the courts. And though in each case the law has been upheld by a judicial decision favorable to the Commonwealth, the points at issue have been different in each action, and the lines of defense have severally called in review before the courts a number of different fundamental principles upon which the act is based.

Decisions upon minor details of the act favorable to the Commonwealth have been rendered by Judge Walling, of Erie, in the cases of the Commonwealth vs. H. O. Gibson and Wm. Dentz for practicing dentistry illegally; also by Judge Edwards, of Scranton, in the case of C. S. Faatz on a like charge.

None of the cases have thus far involved a direct attack upon the constitutionality of the act as a whole by which the right of a state to place restrictions upon the qualifications of dental practitioners has been called in question. A recent action in the Lebanon County Court of Quarter Sessions has, however, raised that issue, and the further important question of the right of a practitioner licensed under the statute of another state to practice in Pennsylvania on the strength of his foreign license. The action referred to is that of the Commonwealth vs. Clinton M. Koontz, before Judge Ehrgood, of Lebanon, Pa. We print herewith the text of the special verdict rendered by the jury under instructions from the court, as well as the opinion of the judge. It will be seen that the defendant claimed the right to practice in Pennsylvania under his Maryland license by virtue of the reciprocity clause in the Pennsylvania law, which is as follows:

“And it is further provided that applicants examined and licensed by the State Board of Dental Examiners or State Board of Health of other states, on payment of a fee of ten dollars to the secretary of the Dental Council, and on filing a copy of said license certified with the affidavit of the president and secretary of such board, showing that the standard of requirements adopted by the said State Board of Dental Examiners or State Board of Health is substantially the same as provided by sections nine and twelve of this act, shall, without further examinations receive a license conferring on the holder thereof all the rights and privileges provided by sections thirteen and fifteen of this act.”

The framers of the Pennsylvania dental law of 1897 had clearly in mind the unconstitutionality of any act which would unjustly discriminate against the licensees of other states, when framing the foregoing reciprocity clause of the statute in question, and with the intention to provide for an equitable basis of interchange the clause was so framed that licensees of other states having "*substantially the same standard of requirements*" should not be compelled to undergo a re-examination in order to obtain a license to practice in Pennsylvania. In furtherance of the same idea, and so that the meaning of the statute might be clear in any case of judicial inquiry, the standard of requirements is specified in detail in the act, together with the mode of conducting the examinations and the disposition of the records thereof.

The publicity which the act gives to the examinations and the records thereof is an absolute safeguard which prevents any autocratic or irregular action upon the part of the board prejudicial to the interests of the candidate. This equitable feature was lacking in the previous Pennsylvania law and is omitted from many of the existing dental statutes of other states, notably that of Idaho.

The case tried before Judge Ehrgood, whose opinion is appended, sustains the constitutionality of the act, first upon the fundamental point that a state by virtue of its police power conferred by the Federal Constitution has the absolute right to determine the educational qualifications of those who practice any department of the healing art within its borders; and second, the right to exclude an alien practitioner licensed under the statute of another state when the "*standard of requirements*" of the latter is not "*substantially the same*" as that of the former; this notwithstanding the permissive feature of the reciprocity clause.

The judicial support which this decision affords to the maintenance of a high standard of qualification should not only set at rest any doubts as to the legality of these educational statutes, but should furnish grounds for encouragement to those who believe that in wise and equitable legislation the greatest safeguard to higher standards of professional qualification is to be found.

Each decision affecting the status of dental legislation in the several states should do much toward educating the profession at large with respect to their rights in the premises, and tend to eliminate that wide hiatus between what we want and what we are by right entitled to, so clearly set forth in a recently published article by W. A. Purrington, Esq., of the New York bar.\*

---

\*DENTAL COSMOS, December, 1901, p. 1437.

Dental legislation must, like all other legislation, be regarded as an expression of the will of the people; and it is only by the evolution of a rational status of professional sentiment with regard to this important matter that the best results in the statutory expression of that opinion can be finally reached.

### *SPECIAL VERDICT.*

COMMONWEALTH OF PENNSYLVANIA

*vs.*

C. M. KOONTZ.

In the Court of Quarter Sessions of the Peace of Lebanon County. No. 18, September Sessions, 1901.

The jury having been duly sworn according to law finds, under the instructions of the court, the following special verdict:

The defendant, Clinton M. Koontz, on the 23rd day of April, 1898, was duly licensed by the Maryland Board of Dental Examiners to pursue the practice of dentistry in the State of Maryland. Subsequently he moved to the State of Pennsylvania for the purpose of engaging in the practice of his said profession. With this intention in view he made a payment of a fee of ten dollars to the secretary of the Dental Council of the State of Pennsylvania and filed in the office of the Dental Council a copy of said license, certified with the affidavit of the president and secretary of the Board of Dental Examiners of the State of Maryland, showing that the standard of requirements adopted by the said State Board of Dental Examiners is substantially the same as provided by sections nine and twelve of the Act of Assembly regulating the practice of dentistry, approved the 9th day of July, 1897. Thereupon the Dental Council refused to issue a license to the said Clinton M. Koontz. The said C. M. Koontz thereupon, on the 15th day of July, 1901, in the County of Lebanon, and within the jurisdiction of the Court of Quarter Sessions of Lebanon County, then and there did enter upon the practice of dentistry, and did then and there engage in the practice of dentistry for a valuable consideration, by extracting teeth, filling teeth, and making sets of teeth for divers persons.

The said C. M. Koontz did not then and there have any right or authority to pursue the practice of dentistry, except such, under the law, as are conferred upon him under the above state of facts.

If, under the above facts and the Act of Assembly, approved the 9th day of July, 1897—which is made a part of this verdict—the court is of the opinion that the above Act of Assembly is constitutional and the defendant has violated any of the provisions thereof, then we find the defendant guilty in manner and form as he stands indicted; otherwise not guilty, and the county to pay the costs of prosecution.

It is furthermore agreed that this special verdict shall be submitted to a jury to be drawn from the panel of the civil term of court convened on this 7th day of October, A. D. 1901.

JOHN H. WITTER, *Foreman.*



## OPINION OF THE COURT.

COMMONWEALTH OF PENNSYLVANIA

*vs.*

C. M. KOONTZ.

In the Court of Quarter Sessions of Lebanon County, of September Sessions, 1901, No. 16, Special Verdict.

## BY THE COURT:

The defendant is charged with having been engaged in the practice of dentistry, within the County of Lebanon, without having complied with the provisions of the Act of Assembly of July 9, 1897, P. L. 206.

Under the facts agreed upon by the defendant's counsel and the district attorney and returned by the jury as a special verdict, the provisions of the Act of July 9, 1897, have been clearly violated by the defendant, and the only question for consideration by the court is the alleged unconstitutionality of the said act.

In what respect said act is claimed to be unconstitutional has not been pointed out by the defendant, nor have we been able to find any particular in which we consider the same unconstitutional. The provisions of the Act of July 9, 1897, P. L. 206, establishing a Dental Council and regulating the practice of Dentistry in the State of Pennsylvania are almost identical with the provisions of the Act of May 18, 1893, P. L. 94, establishing a Medical Council and regulating the practice of medicine and surgery in this state. In passing upon the constitutionality of the Act of 1893 the Superior Court in the case of *Commonwealth vs. Finn*, 11 Sup.Ct. 620 held that the right to practice medicine and surgery is not a right which belongs to an individual as a citizen of the United States, but to him as a citizen of a state, and that the right of the state to prescribe qualifications which must be had by all those desiring to practice medicine and surgery is found in the police power of the state, and that the provisions of said Act of 1893 are neither in conflict with the Constitution of the United States nor the Constitution of the State of Pennsylvania.

The reasons of the Superior Court in support of the constitutionality of the Act of 1893 regulating the practice of Medicine and Surgery apply with equal force to the Act of 1897 regulating the practice of Dentistry.

AND NOW, Dec. 19, 1901, it is ordered that the judgment be entered on the special verdict in favor of the Commonwealth against the defendant.

A. W. EHRGOOD, P. J.

## SENTENCE.

AND NOW, to-wit, January 6, A. D. 1902, the sentence of the court is that the defendant shall pay a fine of One hundred and fifty dollars to the Commonwealth, for the use of the County of Lebanon, that he pay the costs of prosecution, and that he stand committed to be in the custody of the sheriff till the sentence be complied with.

## A "MISCHIEF-BREEDING NEGLECT."

THE fact that sound teeth constitute a factor of capital importance for the preservation of health is being appreciated, not only by those professionally concerned with the care of the complicated human mechanism, but also by the layman,—as is evidenced by the articles and commentaries which are published at intervals in magazines and in the daily journals. Dentistry is at present justly regarded as a valuable and, indeed, an indispensable help in the solution of many of the problems with which the various members of the healing fraternity are daily confronted, and when this fact is duly recognized on their part much satisfaction is felt that the efforts of the dental profession in educating the public toward a higher appreciation of dentistry are bearing their fruit.

While, however, progressive movements in this direction are in evidence in almost all civilized countries, the governments, with the exception of those of the United States and Germany, show as yet an astounding degree of apathy in this direction. That this official indifference has consequences highly detrimental directly to the nation's defenders and indirectly to the country itself, is clear to everyone who has given the subject intelligent consideration. While the need for government attention to dentistry as a public health measure may seem clear to all those who, from a knowledge of the facts, realize its importance, there are still some who for reasons best known to themselves turn a deaf ear to the suggestions which in the interests of humanity are made by those who foresee the results of this apathy. Poor Richard's concatenate warning comes to mind here: "A little neglect may breed mischief: For want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost!" The dental profession can only warn the authorities of the evil which the need of dental services in the army, the navy, and the public schools may bring about. Its work is limited to sounding the trumpet of danger; it rests with the respective governments to do the initiative work of organizing appropriate dental services.

That the agitation of this question by the dental profession of France is weak, on the one hand, or, on the other, that the government has not given to it the amount of consideration to which it is entitled, is evinced by the following quotation from the European edition of the *New York Herald*:

Although toothache is about the commonest, as it is certainly one of the most excruciating, forms of physical suffering, no provision is made for relieving it either in the army or in the public hospitals. Every preparation is made to grapple with any malady, to perform the most compli-

cated, dangerous, or trifling operation, but let a poor *pioupiou* in the army, or a hospital patient, need attention on account of a decayed tooth, and the unfortunate creature is immediately turned over to the tender mercies of a well-intentioned but hopelessly ignorant nurse or of a muscular comrade armed with a pair of pincers.

It is incomprehensible that such a condition of affairs should obtain when one realizes the gigantic strides that have been made in dentistry, particularly in the United States. The purely empiric treatment of prehistoric times has disappeared before a truly scientific method of anatomical study by research and experiment. All the inventive genius of the American has been called into requisition for the creation of most ingenious and efficacious instruments, and thanks to years of investigation and to the unremitting efforts of sincere practitioners who have devoted all their time and intellectual energies to the subject, dentistry has been rescued from the grip of charlatans, and the dentist is beginning to take his legitimate place as a specialist beside the oculist, the aurist, and other benefactors of suffering humanity. He is beginning to get some of the well-merited respect now universally paid to surgeons, who within the memory of living men were classed with barbers, cuppers, and blood-letters.

It is certainly time, therefore, that some minister of war with a genius, as M. Louis Manini observes, should ameliorate the lot of those serving their country with the flag by introducing a much-needed reform in the army medical corps. The organization of a dentistry service would be a very simple matter. It would be a just tribute paid to a distinct branch of science in which astonishingly rapid progress has been made. Common sense dictates that modern methods should be no more neglected in dealing with a trooper's teeth than with his eyes or his ears.

---

## BIBLIOGRAPHICAL.

---

### DENTAL SURGERY, INCLUDING SPECIAL ANATOMY AND PATHOLOGY.

A Manual for Students and Practitioners. By HENRY SEWILL, M.R.C.S., L.D.S. Eng. Fourth Edition, edited by W. J. England, L.D.S., and J. Sefton Sewill, L.R.C.P., M.R.C.S., L.D.S. Eng. London: Bailliere, Tindall & Cox, 1901.

We take it from a perusal of this work that it is intended mainly for the instruction of the practitioner of medicine in regard to matters dental. Indeed, that is the avowed purpose of the work as stated in the preface. A review of it must consider the result as related to the end for which it was intended, and in that light the volume before us may be regarded as an acceptable addition to medical literature. On the other hand, as a work intended for the instruction of students of dentistry, it is lacking in a number of essential features.



That portion of the work dealing with the anatomy, histology, and development of the jaws and teeth is well written and fairly covers the ground. The section on irregularities of the teeth is good so far as it goes, but it seems to us to be deficient in two features,—namely, first, that the question of etiology is but meagerly treated and the correction of malpositions of the teeth is exemplified by appliances which in view of the more recent developments in this department of dental therapeutics seem to be not only cumbersome but largely antiquated. We are surprised to find in a modern work the survival of any favorable description of Arthur's method of excision of carious areas upon the approximal surfaces of the teeth, a practice which has been relegated by the majority of practitioners to that limbo to which the pelican and turnkey were years ago consigned.

The description of filling methods is insufficient even for the understanding of a medical practitioner, and the illustrations of cavity preparation are not in accordance with the views accepted by American practitioners at least. Incidentally, the illustration of cavity preparation shown by Fig. 191 is unique of its kind. Were it not for the descriptive text, one might readily mistake the drawing as representing a porous plaster applied for the relief of a sacral neuralgia; and this leads us to say further, and without the least intention to be hypercritical, that the general character of the illustrations is much below modern standards both in drawing and mechanical execution. There is little excuse in these days of good illustrations at low cost why any text-book should be marred with illustrative figures so crude as are many of those printed in the volume before us. We note an error in reference to the authorship of the device figured as 213, which is credited to Dr. J. Leon Williams, but which method of crowning was introduced by Dr. H. F. Maasch, and published by him in the DENTAL COSMOS for March, 1892.

From the purely medical point of view, we could have desired a somewhat more emphatic presentation of dental prophylaxis, not only as related to the adult mouth, but as related to the oral cavity at all ages, even in the pre-dental period of infancy.

While we have criticized a few features of the work, we regard it as on the whole admirably adapted to the purposes for which it was written, and we feel that not only the public, but the dental profession would have much cause for satisfaction could they be assured that the information which the book contains were part of the educational equipment of every practitioner of medicine.

## OBITUARY.

### DR. GEO. W. CALDWELL.

DIED, at his residence, 1525 Arch street, Philadelphia, January 1, 1902, of paralysis, Dr. GEO. WORTHINGTON CALDWELL, in the fifty-eighth year of his age.

Dr. Caldwell was born January 27, 1844, at Burlington, N. J. When he was eighteen years of age he entered the office of Dr. Henry Reinstein as a student, and subsequently attended the Pennsylvania College of Dental Surgery, from which he was graduated in 1864. On receiving his degree he entered upon the practice of his profession in Burlington, N. J., whence he moved to Philadelphia on the death of Prof. Geo. T. Barker in 1878, to whose practice he succeeded.

Dr. Caldwell married in October, 1878, Miss Elizabeth W. Belding, of Burlington, N. J., who with two children survives him.

---

## PERISCOPE.

**To Prevent Rusting of Inside of Hypodermic Needle.**—After using the needle, dry it by forcing air through it from a hot-air syringe.—*Dental Brief.*

**Changing the Shade of a Porcelain Tooth.**—The shade of a porcelain tooth can be changed to a darker tint by carefully heating over an alcohol flame for a few minutes.—*Items of Interest.*

**Lycopodium an Explosive.**—Lycopodium, which is sometimes used as a separating medium in the making of sand impressions for the casting of metallic dies, explodes if any of the dust falls into a gas flame.

**Relief of Toothache from Inflamed Pulp.**—Introduce into the cavity a plug of cotton steeped in an alcoholic solution of orthoform. The pain instantly disappears and ceases for a considerable time. Being absolutely non-toxic it constitutes a simple remedy which the patient can apply without danger.—*Medical Press.*

**Is It Possible to Render the Hands Aseptic?**—Mikulicz (*Journal des Praticiens*) has made seventy-two bacteriological examinations of hands that had been subjected to a thorough washing and has found that in two-thirds of these cases the hands were infected. Twelve per cent. of those who operate upon septic fields have their hands in an infected condition for a considerable length of time, the organism present being as a rule the staphylococcus. There are very marked differences in the epidermis of various individuals, the hands of some being sterilized with greater facility than those of others. He states that the use of soap alone is insufficient. Alcohol of 90° gives the best results, rendering the hands aseptic in 78 per cent. of cases. Mikulicz has found that infection is greater after the use of an antiseptic. On the other hand Paul and Sarwey have found that immediately after washing the hands in alcohol the disinfection is good, but if then plunged in sterilized water microbic growths will take place in nearly every case. These facts would seem to indicate that it is impossible to obtain perfect asepsis of the hands. This, however, is not the opinion of M. Dellet, whose demonstrations satisfy him that perfect asepsis of the hands is always possible.

**A Famous Tooth.**—As some interest has been recently revived with regard to the largest human tooth on record, we publish the following item, which may prove of interest to our readers:

Geoffroy II, of the house of Lusignan, a lord paramount of the middle ages, became legendary in Poitou,—where he was known under the name of “the devil,”—but is also very well known in history by the surname of “La Grand’dent” (The Large-tooth). This name was given to him, according to the ancient scribes, because he “brought into the world a tooth which projected from his mouth more than one inch.” The giant tooth of this distinguished personage is certified to not only by the surname which it gave to its possessor, but also by three documents and one medal collected by M. Farcinet.—*Exchange*.

**Primary Treatment of Infected Wounds with Tincture of Iodin.**—Disinfecting a wound thoroughly after infection has occurred, even though aseptic treatment of wounds is now almost ideal, says Beck, in the *Medical Record* of August 3, 1901, is as yet practically impossible. A drug that would penetrate the deeper layers of the infected tissue is the great desideratum. This permeating power is found to some extent in tincture of iodine. Beck has used it methodically in all infected wounds, and he considers all wounds that are not inflicted by the aseptic surgeon in an aseptic field as infected. He applies the tincture liberally once over the carefully dried wound surface. Fifteen minutes afterward, examination of the tissues shows evidence of permeation, and no cultures can be obtained from such areas. If the bacteria are not destroyed, the soil is rendered unfavorable to their further development. In Beck’s cases no general disturbance has yet been observed in the large number of patients on whom the iodine treatment has been tried, although in two cases iodine reaction was found in the urine three and four hours after the application. The further treatment was carried out on general principles.—*Therapeutic Gazette*.

**A Rapid Method of Producing Regulating Plates or Partial Dentures in Hard Rubber.**—Mr. Geo. Brunton (*Journal of the British Dental Association*) is the author of the following description of a rapid method of making rubber plates. The plaster model must be dry. The surface to be covered by the plate is first painted with a solution of rubber in chloroform (a good rubber for this purpose is the quick vulcanizing rubber). The chloroform is then allowed to evaporate, which will take place in a few minutes. A piece of quick vulcanizing base-plate rubber cut somewhat near the size required is warmed and pressed down on the painted surface of the model, taking care that it comes in close contact with every part. The superfluous edges are then trimmed off and the regulating appliances put in position, or the teeth are mounted by warming them and pressing them into their places. At this stage of the operation the rubber is covered with tin foil and placed in a metal box of any kind large enough to hold the model, which is then surrounded with French chalk (steatite) which has to be packed lightly so as not to disturb the teeth; the lid is fastened down with wire or cord and the piece is then vulcanized in the ordinary way. The advantages of this method are the saving of time, no investment in plaster of Paris or a flask being necessary, and the production of a superior quality of rubber.

**“Chiaie Teeth.”**—Dr. J. M. Eager, of the U. S. Marine Hospital service, reports from Naples, Italy, the frequency of a dental abnormality among the inhabitants of the Italian littoral, and known as “denti di Chiaie,” this defect having been first described by Prof. Stefano Chiaie. This impairment of the teeth, often not amounting to more than a slight imperfection, is of particular



interest owing to the fact that Italians who are its subjects frequently present themselves before medical practitioners in the United States. This dental abnormality is an acquired condition and is due to geological conditions and unsanitary surroundings. In Naples it has been attributed to the water supply, and since this has been changed the disease among infants has greatly diminished.

"Denti di Chiaia" is really a collective name for various enamel defects. In Pozzuoli, a suburb of Naples, the inhabitants are distinguished from the people of the neighboring places by their black teeth ("denti neri"). This defect is supposed to be caused by the noisome gases from volcanos. The theory most generally accepted in Italy is that these gases have a selective harmful effect upon enamel formation in early childhood, but that the growth of the other dental tissues is not interfered with. When the cause is active during the entire period of second dentition the whole tooth is deprived of enamel and becomes perfectly black. If the growing teeth are exposed for only a short time at the commencement of their formation, only the cutting edges of the upper incisors are affected, and the appearance when the teeth are matured is as if they had been browned by tobacco. The "denti scritti" (the teeth appearing as if written upon) constitute another form of Chiaia teeth. These cases are characterized by black markings crossing the incisor teeth in a horizontal direction.

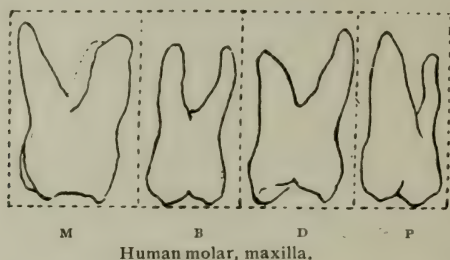
**On the Linear Determination of the Human Tooth Form.**—For some years past I have been engaged in a study of abnormal teeth, of which a fine collection has been made in Dublin. In the best illustrations that I have been able to gather from books I am often at a loss to know what are the points of view from which they have been drawn, as the artist often relies upon mere perspective to show a resemblance to the object which he has depicted. Anyone skilled in close observation can too often see that the artist has not understood the explanatory capabilities of the specimen. This leads to confusion and misunderstanding amongst those who are working at this subject; and, in fact, I have found it impossible to get any two authorities to agree as to the exact characteristics of even the normal human teeth.

Anatomically speaking, the descriptions of the human teeth ought to tally with each other. Amongst the more original, and shall I say skilled, observers, differences in form are described that may be familiar to other observers when described or illustrated from a fixed point of view. Mr. Charles Tomes has formed one ideal type of normal human teeth, Mr. Andrew Wilson of Edinburgh another, and Mr. Humphreys of Birmingham a third. Mr. Tomes is alone in showing illustrations of the normal types, which, however, are not all drawn on a definite plan, but in positions which the artist thought would suitably express his idea of the object.

With a view to determining the most characteristic abnormal deviations of the crowns and roots of human teeth, I have endeavored to borrow from different sources an anatomical and normal set of human teeth, but I have not been successful. It would appear that skilled anatomists and dentists have not yet agreed upon the characteristics that would determine anatomical stability of tooth form. I have spent some time in comparing, classifying, and reducing to order a large number of abnormal teeth. I have not yet succeeded in obtaining a set of normal teeth, from which starting-point, as it were, to note the departure into what are accepted as abnormal classes.

I have tried the following method as a means by which a number of skilled observers could work on a common basis of accurate investigation. A diagrammatic rather than a verbal description would seem to me a more satisfactory way of conducting such an investigation. In order to do this, we can make use of the surfaces of the tooth-crown, which are technically known to

dentists all over the world as mesial, buccal, distal, and palatal in the maxilla, and mesial, buccal, distal, and lingual in the mandible. By adopting this method, all observers can treat the tooth-crown and its root or roots as a cube, so that each side of the geometrical form which I have selected would be understood, and the tooth form described with actual precision by making an outline of it. The diagrammatic dental formula of each tooth would therefore run so:

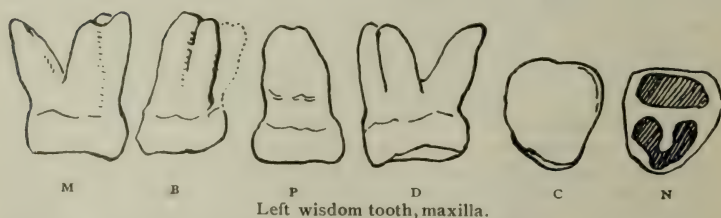
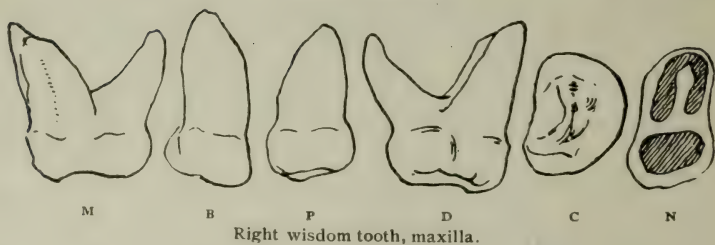


In order to make the investigation useful to dentists, I would figure the neck of the tooth as the upper or lower surface of a tooth in the diagram as well as the crown with its cusps.

By pursuing this line of investigation, I have come across many examples of teeth that have not been described or figured in any book. I have seen



Dr. Dubois's illustration.



some of these types in museums in different places; but, so far, no one appears to have attempted any complete, or shall I say comparatively complete,

classification of such interesting parts of our human frame. I shall show my meaning more clearly, perhaps, if I apply this method of observation to the teeth of *Pithecanthropus erectus* brought from Java by Professor Dubois some years ago. Professor Cunningham brought me, some years ago, the illustration of this tooth in Dr. Dubois' memoir, and asked me if I knew of any human tooth that resembled it. It is not an easy question to answer, as, in my opinion, the tooth is inadequately drawn. By the diagrammatic method I have been able to show many points of divergence that are not shown in the illustration as it stands in the memoir.

In the accompanying figure I have drawn the tooth forms simply, so as to show how much more clearly a diagram drawn by a definite method will convey the chief characteristics of any tooth, except, perhaps, the incisors of the pachyderms or rodents, which in some positions would have to be drawn in acute perspective. I have never had the opportunity of examining the teeth of the higher apes by this method. I believe, however, that it would afford some remarkable figures, and enable us to compare the tooth forms of the primates more easily and directly than we have ever been able to do. Thus, many differences and variations would be ascertained by this systematic method of observation, which it is impossible to convey to observers, who do not see the specimens, by pages of verbal description, however accurate.—W. BOOTH PEARSALL, F.R.C.S.I., in *Journal of Anatomy and Physiology*.

---

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

---

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

---

- Bayle** (C.) \*Cancer du maxillaire supérieur d'une forme ayant pour origine les glandes muqueuses de la voûte palatine. Lyon, 1901, A. Rey, 49 pp., 2 pl. 8°.
- Doege** (E.) \*Zwei Fälle von Carcinom der Parotis. [Freiburg i. Br.] Berlin, 1901, M. Günther, 30 pp., 1 l. 8°.
- Feder** (P.) \*Ueber den gegenärtigen Standpunkt inserer Kenntnisse der Mundhöhle. Jena, 1900, B. Vopelius, 1 pl., 100 pp. 8°.
- Gorgas** (F. J. S.) Questions and answers embracing the curriculum of the dental student; divided into three parts. Philadelphia, 1901, P. Blakiston's Son & Co., 531 pp. 8°.
- Grässner** (F. B. R.) \*Ueber Unterkiefer-Frakturen. Halle a S., 1901, C. A. Kaemmerer & Co., 46 pp. 8°.
- Jung** (H.) \*Zur Casuistik der Lymphsarcome der Rachentonsille. Greifswald 1901, H. Adler, 30 pp., 2 l. 8°.
- Lipschitz** (M.) Richtige Zahnpflege, eine Nothwendigkeit zur Erhaltung der Zähne. 2. Aufl. Berlin, 1901, W. & S. Loewenthal, 31 pp. 12°.
- Rapp** (F. X.) \*Regenerative Vorgänge an Muskeln und Drüsen, sowie eigenartige, Rückbildungsprozesse am Deckepithel eines amputationsstumpfes der Zunge. [Zugleich ein Beitrag zur Lehre vom Recidiv.] Würzburg, 1901, A. Boegler, 28 pp., 1 l. 8°.
- Roudié** (E.) \*Le cancer du pharynx et les pharyngectomies larges. (Etude clinique et statistique). Lyon, 1900, A. Perretton, 78 pp. 8°.
- Schulz** (R.) \*Beitrag zur Lehre von den Blutungen nach Zahnextraktionen und deren medikamentöse und mechanische Behandlung. [Würzburg.] Potsdam, 1901, A. W. Nays's Erben, 42 pp., 1 l. 8°.
- Stern** (J.) \*Congenitale Anomalien der Uvula und des weichen Gaumens. Würzburg, 1901, 17 pp., 1 l. 8°.



- Trolldenier** (P.) \*Ueber die anästhesirenden Eigenschaften der Acoine. [Giessen.] Jena, 1901, G. Fischer, 44 pp., 1 l. 8°.
- Abbott** (F. C.) A case of total necrosis of the lower jaw; result. Rep. Soc. Study Dis. Child., Lond., 1900-1901, i, 68.
- Adair** (R. B.) Etiology of the degeneracy of the human teeth. Dental Reg., Cincin., 1901, lv, 623-627.
- Aiston** (R. T.) Peridental atrophy. Dental Rev., Chicago, 1902, xvi, 10-28.
- Ames** (W. V. B.) Some amalgam experiments. *Ibid.*: 1901, xv, 1121-1123. [Discussion], 1176-1183.
- Splints for retaining loose teeth. Dental Digest, Chicago, 1901, vii, 966-979.
- Amoedo** (O.) Sinusites maxillaires. Odontologie, Par., 1901, 2. s., xiii, 505-521.
- Apffelstaedt**. Eine Brückensystem einiger Erfindung (sog. Kasten-System). Zahnärztl. Rundschau, Berl., 1901, x, No. 495.
- Arcoleo** (E.) Su di un caso di fibroma nella lingua. Boll. d. clin., Milano, 1901, xviii, 496-500.
- Ashbrook** (J. S.) Usos del ácido tricloroacético. Correo odont., internac., Madrid, 1901, vi, 2542-2554.
- Aubin** (E. D.) [Cyst of the lower jaw.] N. Zealand M. J., Wellington, 1901-2, ii, 86.
- Baldwin** (L. B.) Extra-genital syphilis. Dental Rev., Chicago, 1902, xvi, 4-9. [Discussion], 38-48.
- Barker** (Charles Coffin.) [1838-1901.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 80.
- Battle** (J. F. J.) Hypertrophy of the pharyngeal tonsil and its treatment. Tr. M. Soc., N. Car., Charlotte, 1900, 61-64.
- Bauchwitz** (M.) Sensitives Dentin und seine Behandlung mit Kohlensäure. Zahnärztl. Rundschau, Berl., 1901, x, Nos. 490; 491; 492.
- Also: Deutsche Zahnärztl. Wehnschr., Wiesb., 1901, iv, 357-359.
- Baudouin** (M.) Les anomalies dentaires dans l'histoire: la canine géante de Geoffroy la Grand'dent. Odontologie, Par., 1901, 2. s., xiii, 609-615.
- Beacock** (D. V.) Vaccination a prime factor in the destruction of children's teeth. Dominion Dent. J., Toronto, 1901, xiii, 467-471; 1902, xiv, 13-18.
- Becco** (A.) Di una nuova cheiloplastica postuma ad operazione per labbro leporino semplice. Atti Cong. region figure 1898, Savona, 1899, iv, 183-187, 1 pl.
- Benevento** (A.) Studio sul mughetto dal punto di vista dell' etiologia e della terapia. Atti d. Cong. pediat. ital. 1898, Torino, 1900, iii, 63-65.
- Betts** (G. O.) Polishing plates for vulcanite work simplified by using an ordinary flask as a swager. J. Brit. Dent. Ass., Lond., 1901, xxii, 680.
- Biagi** (N.) Sulla cura chirurgica della nevralgia del trigemino. Policlin., Roma, 1901, viii, sez. chir., 587-602.
- Billeter** (H. J.) Zur Chloräthylnarkose und über Nieriker's Chloräthylmaske. Schweiz. Vrtljschr. f. Zahnh., Zurich, Genève, 1901, xi, 239-244.
- Birch** (J. C.) Some of the possibilities of a dental lathe. J. Brit. Dent. Ass., Lond., 1901, xxii, 682-684.
- Boom** (H. H.) A study of acids occurring in the mouth. Items Interest, N. Y., 1902, xxiv, 27-29. [Discussion], 38-44.
- Booth** (B. S.) Report of a case of sarcoma of the right tonsil. Laryngoscope, St. Louis, 1901, xi, 417-419.
- Bosworth** (F. H.) Are the tonsils to be regarded as normal physiological organs of the body? Med. Rec., N. Y., 1902, lxi, 50-52.
- Bradley** (J. H.) Interesting point in operative treatment of empyema of the antrum of Highmore. Austral. J., Dent., Melbourne, 1901, v, 89-93.
- Brocq, Monier & Civatte**. Neoplasie de la face dorsale de la langue. Ann. de dermat. et syph., Par., 1901, 4. s., ii, 1066-1071.
- Broomell** (I. N.) Discussion on burs and bur shavings. Dental Cosmos, Phila., 1902, xlv, 53.
- Brown** (E. R.) An unusual tumor of the soft palate. Montreal M. J., 1901, xxx, 937.
- Brown** (G. V. I.) Surgical treatment of cleft palate in relation to speech. Tr. M. Soc., Wisconsin, Madison, 1901, 260-287.
- Burrell** (H. L.) A case of noma. Boston, M. & S. J., 1902, cxlvi, 41.
- Callahan** (P. H.) Treatment of deciduous teeth, etc. Texas Dent. J., Dallas, 1902, xx, 19-21.
- Cameron** (R.) Cancrum oris with its common complications. Lancet, Lond., 1901, ii, 1730.
- Campbell** (G.), jr. A case of lingual hemiatrophy. St. Louis Cour. Med., 1901, xxv, 407-412.
- Capon** (F. J.) Lectures on crown- and bridge-work. Dominion Dent. J. Toronto, 1901, xiii, 455-460.
- Capon** (W. S.) Porcelain fillings, after 12 years. Items Interest, N. Y., 1902, xxiv, 22-26. [Discussion], 30-37.
- Caush** (D. E.) The development of secondary dentine. J. Brit. Dent. Ass., Lond., 1901, xxii, 668-676.
- Cigrand** (B. J.) The basal temperament relative to prosthesis.—Dental Reg., Cincin., 1901, lv, 595-608, 2 pl.
- Clement** (R. H.) Anestésicos. Correo odont. internac., Madrid, 1901, vi, 2579-2587.
- Clifford** (E. L.) The limits of dental therapeutics. Dental Reg., Cincin., 1901, lv, 608-617.
- Chinesische Zahnheilkunde in Siam**. Zahntech. Rundschau, Berl., 1901, No. 487.
- Chompert & de Névrezé** (B.) Lymphangiectasies de la bouche (varices lymphatiques) et formations fibrino-cornées d'origine infectieuse. Rev. de stomatol., Par., 1901, viii, 558-568.
- Choquet** (M. J.) Contribución al estudio de la esterilización ideal de la dentina, aplicable à la obturación. Correo odont., internac., Madrid, 1901, vi, 2535; 2587.
- Christensen** (C.) Röhren-Blocks: Continuous-Gum-Arbeit auf Gold-Basis. Zahntech. Reform, Berl., 1901, xx, 317-322.
- Comba** (C.) Contributo allo studio della etiologia e della patogenesi del noma delle guancie. Atti d. Cong. Pediat. ital. 1898, Torino, 1901, iii, 138-140.
- Constant** (T. E.) The movements of the mandible. Brit. J. Dent. Sc., Lond.,

- 1901, xlv, 1011; 1066; 1119.—**Cooke** (W. H.) Oral surgery: cases in practice. Texas Dent. J., Dallas, 1902, xx, 15.—**Corley** (J. P.) Inflammatory phenomena due to an unerupted third molar. Dental Digest, Chicago, 1902, viii, 15-19.—**Dawbarn** (R. H. M.) Oral surgery. Tr. N. York Odont. Soc., 1900, Phila., 1901, 51-58.—**Demme** (K.) Ueber Gefassanomalien im Pharynx. Wien med. Wchnschr., 1901, li, 2245-2248.—**Dench** (E. B.) Reflex aural symptoms dependent upon dental caries. Tr. N. York Odont. Soc., 1900, Phila., 1901, 118-125.—**Dervaux**. Tic douloureux de la face, dans la région du nerf maxillaire inférieur; résection de ce nerf à la base du crâne, dans le trou ovale; guérison. Echo méd., Toulouse, 1901, 2. s., xv, 613-616.—**Dietrich**. Kalium permanganicum zur Wurzelsterilisation. Deutsche Zahnärztl. Wchnschr., Wiesb., 1901, iv, 359.—**von Donop** (F.) Zusendung unbestellter Waren zur Ansicht. Zahntechn. Rundschau, Berl., 1901, Nos. 487; 490.—**Dorn** (R.) Ueber die Verwendbarkeit des Wasserstoff-superoxyds in der Zahnheilkunde. Mit besonderer Berücksichtigung des Hydrogenium peroxdatum purissimum Merck: 30 Gewichtsprocente; 100 Volumprocente H<sub>2</sub>O<sub>2</sub> enthaltend. Wien. Zahnärztl. Monatsschr. 1901, iii, 574-587.—**Downie** (W.) & **A. R. Ferguson**. Case of round-cell sarcoma of palate and pharynx with metastatic tumours in the viscera. Glasgow M. J., 1901, lvi, 437-440.—**Dulles** (C. W.) Note on the treatment of follicular tonsillitis. Phila. M. J., 1902, ix, 71.—**Ekström** (I.) Die Caries frequenzuntersuchungen in verschiedenartigen Beleuchtung. J. f. Zahnh., Berl., 1901, xvi, 229-232.—**Elstob** (H. G.) Fractures of the jaw and their treatment. Brit. J. Dent. Sc., Lond., 1902, xlv, 5-12.—**Essig** (Charles J.) [1841-1901.] (Obituary.) Internat. Dent. J., Phila., 1902, xxiii, 61-65, port.—*Also*: Dental Rev., Chicago, 1902, xvi, 90.—*Also*: Dental Cosmos, Phila., 1902, xlv, 78-80, port.—*Also*: Dental Brief, Phila., 1902, vii, 38, port.—**Evans** (G.) Porcelain inlay work. Dental Cosmos, Phila., 1902, xlv, 25-34.—**Finger** (E.) La syphilis de la bouche et ses relations avec la médecine dentaire. Odontologie, Par., 1901, 2. s., xiii, 685-692.—**Fischer** (A.) Teljes felső allkapocs resectio gyógyult esete. [A case of recovery after complete resection of the upper jaw bone.] Orvosi hetil., Budapest, 1901, xlv, 752.—**Flote** (W. F.) A diatoric crown. J. Brit. Dent. Ass., Lond., 1901, xxii, 678.—**Forsyth** (E. A.) Amygdalotomy rash. N. York M. J., 1901, lxxiv, 1144.—**Fox** (C.) Far from the tempting tube. Brit. J. Dent. Sc., Lond., 1902, xlv, 1-4.—**Frey** (A.) Ueber die Behandlung von Neuralgien mit der Heissluftdouche. Heilkunde, Wien, [etc.], 1901, 618.—**Fritzschke** (C.) Ein neuer Vulkanisierofen mit eigener Thermoregulierung: Isothermovulkanisator. Deutsche Monatsschr. f. Zahnh., Leipz., 1901, xix, 550-556.—Ueber Unterkieferprothesen und über einen neuen künstlichen Unterkiefer. Deutsche Ztschr. f. Chir., Leipz., 1901, lxi, 560-576.—*Also*: J. f. Zahnh., Berl., 1901, xvi, 253; 264.—*Also*: Zahnärztl. Rundschau, Berl., 1901, x, No. 495.—**Galippe**. De l'hérédité des stigmates maxillo-dentaires. Progrès dent., Par., 1901, xxviii, 323-325.—**Galippe** (V.) Etude sur l'hérédité des anomalies des maxillaires et des dents; hérédité similaire; hérédité dissemblable. Rev. de méd., Par., 1901, xxi, 817; 954; 1027.—**Gardner** (H. B.) The administration of anaesthetics for dental operations. J. Brit. Dent. Ass., Lond., 1901, xxii, 665.—**Gaupp** (E.) Bemerkung, betreffend das Epithel auf den Papillen Frotschzone. Anat. Anz., Jena, 1901, xx, 269.—**Gavello** (G.) Uno strumento per l'operazione radicale delle sinusiti mascellare croniche col processo di Caldwell-Luc. Arch. ital. di otol. [etc.], Torino, 1901-2, xii, 221-225.—**Geist-Jacobi**. Der Entdecker des Anaesthesie Crawford Williamson Long. Deutsche Zahnärztl. Wchnschr., Wiesb., 1901, iv, 346-349.—**Gerota**. Calcul salivar voluminosi in glanda submaxilară; diagnosticul prin razele lui Röntgen. [ ] diagnosis by Röntgen rays.] Spitalul, Bucuresci, 1901, xxi, 623-625.—**Gerster** (E.) Ein Beitrag zur Wurzelkanal-Behandlung und Füllung. J. f. Zahnh., Berl., 1901, xvi, 246-248.—*Also*: Schweiz. Vrtljschr. f. Zahnh., Zurich and Genève, 1901, xi, 259-264.—**Gillett** (H. W.) Cataphoresis and dehydration for obtunding sensitive dentin. Tr. N. York Odont. Soc. 1900, Phila., 1901, 66-75.—**Gilmer** (T. L.) Odontomes. Dental Digest, Chicago, 1901, vii, 953-964, 3 pl.—**Giuria** (P. M.) Apparecchi di protesi nelle fratture e nelle resezione di mascellari. Atti Cong. region. ligure, 1897, Genova, 1898, iii, 147-157.—**Glogau** (E. A.) Ueber Kronen, Brücken und Zahnschienen. Schweiz. Vrtljschr. f. Zahnh., Zurich & Genève, 1901, xi, 244-251.—**Goldan** (S. O.) A new apparatus for the administration of nitrous oxid and oxygen. Dental Cosmos, Phila., 1902, xlv, 40-49.—The administration of anaesthetics in dental surgery. Tr. N. York Odont. Soc. 1900, Phila., 1901, 90-104.—**Goslee** (H. J.) The shell or telescope crown. Items Interest, N. Y., 1902, xxiv, 1-21.—The use of the saddle in stationary bridge work. Dental Rev., Chicago, 1902, xvi, 1-4.—**Greve**. Ueber das Wesen und die Differentialdiagnose der Caries alveolaris specifica. Wien. med. Wchnschr., 1901, li, 2351; 2400.—**Griffin** (W. L. J.) The dentition of snakes. Dental Brief, Phila., 1902, vii, 8-11.—**Guttmann**. Neue Methoden für Herstellung und Anwendung von Porzellan-Einlage-Füllungen. J. f. Zahnh., Berl., 1901, xvi, 232-234.—**Hahn**. Die Zahnfleischfistel und ihre Behandlung. Wien. Zahnärztl. Monatsschr. 1901, iii, 501-529.—**Hanaford** (M. L.) The filling of the root canals of teeth. Dental Rev., Chicago, 1901, xv, 1111-1120.—**Harlan** (A. W.) A review of recent literature on the loose tooth or pyorrhea problem. Tr. N. York Odont. Soc. 1900, Phila., 1901,



- 11-29.—Some recent additions to dental medicine. *Dental Rev.*, Chicago, 1901, xv, 1134-1138.—**Head** (J.) Bleaching enamel. *Dental Digest*, Chicago, 1901, vii, 1002-1005.—The shadow problems of porcelain inlays. *Tr. N. York Odont. Soc.*, 1900, Phila., 1901, 1-11.—**Heckard** (W. A.) Continued anesthesia with nitrous oxid, under definite pressure. *Dental Cosmos*, Phila., 1902, xlv, 16-21.—**Henderson** (T.) The administration of nitrous oxide. *Dominion Dent. J.*, Toronto, 1901, xiii, 460-463.—**Hewett** (A. C.) Proof of the value of analgics and anesthetics in dental offices. *West. Dent. J.*, Kansas City, 1901, xv, 529-546.—**Hirschfeld** (W.) Irregularity of a front tooth corrected by a porcelain inlay. *Tr. N. York Odont. Soc.*, 1900, Phila., 1901, 107-116.—**Howard** (W. R.) An unusual operation [extraction and insertion of artificial teeth.] *Internat. Dent. J.*, Phila., 1902, xxiii, 9-11.—**Jacquet** (L.) Irritation gingivale comme point de départ de la pelade. *Ann. de dermat. et syph.*, Par., 1901, 4. s., ii, 1063-1066.—**Jankelevitch** (S.) La tuberculose latente des amygdales et des végétations adénoïdes. *Semaine méd.*, Par., 1902, xxii, 1-6.—**Janowsky** (L. J.) Zur Frage des Lippenkrebses. *Arch. f. klin. Chir.*, Berl., 1901, lxx, 329-352.—**Jeannel**. Névralgie rebelle du trijumeau; résection du ganglion de Gasser. *Languedoc méd. chir.*, Toulouse, 1901, ix, 363.—**Jessen** (E.) Pro igiene dentale. *Gior. di corrisp. p. dentisti*, Milano, 1901, xxx, 356.—**Johnson** (H. H.) Gold filling, a retrospect. *Dental Digest*, Chicago, 1902, viii, 1-8.—Fracture of the jaw; report of two cases. *Ibid.*: 19-21.—Crown work. *Ibid.*: 31-33.—**Jones** (A.) & **R. P. Lennox**. Removing the crowns of living teeth, and applying immediately all-porcelain crowns by a new method of fixing. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 688-690.—**Jones** (B.) Solila gold: its advantages and uses. *Texas Dent. J.*, Dallas, 1902, xx, 16-19.—**Judd** (I. M.) Zlamanie zeba samvistne. (Fractura dentist spontanea.) *Przegl. dent.*, Warszawa, 1901, iv, 185; 112.—**Keevil** (J. M.) A fusible metal in crown work. *Brit. J. Dent. Sc.*, Lond., 1901, xlv, 1121.—**Kelley** (H. A.) The control of our patients. *Internat. Dent. J.*, Phila., 1902, xxiii, 26-31.—**Keyes** (W. B.) Pyorrhea alveolaris with special reference to practical medicine. *Dental Cosmos*, Phila., 1902, xlv, 1-9.—**Kingsley** (N. W.) Has legislation cured quackery? *Tr. N. York Odont. Soc.*, 1900, Phila., 1901, 33-49.—**Kiparski** (R. V.) [Malignant tumors of the sublingual gland.] *Yubil. sborn. v chest. . . . Sklefosovskavo*, S.-Peterb., 1900, 149-153.—**Knox** (A. W.) Necrosis of inferior maxilla. *Tr. M. Soc. N. Car.*, Charlotte, 1901, 127-132.—**Krakowski**. O przypadloscioch ze strony jamy ustnej pod wplywem grypy. [Accidents to the mouth following the gripe.] *Przegl. dent.*, Warszawa, 1901, iv, 32-47.—**Krause** (R.) Beiträge zur Histologie der Speicheldrüsen; über die Ausschneidung des indig-schwefelsauren Natrons durch die Glandula submaxillaris. *Arch. f. mikr. Anat.*, Bonn, 1901, lix, 407-417, 1 pl.—**Lawley-York** (E.) Proposition d'une nouvelle méthode de traitement des plaies buccales. *Progrès dent.*, Par., 1901, xxviii, 353-356.—**Lebedinsky & C. Lée**. Contribution à l'étude de la stomatite ulcéro-membraneuse. *Rev. de stomatol.*, Par., 1901, viii, 529-545.—**Lepkowski** (W.) & **L. Wachholz**. O zebach pod wzgledem sadowo-lekarskim. (The teeth in legal medicine.) *Przegl. dent.*, Warszawa, 1901, iv, 152; 192.—*Also*: *Przegl. lek.*, Warszawa, 1901, iv, 152; 192; 219; 262.—**Leszynsky** (W. M.) Remarks on neuralgia and allied affections. *Tr. M. Soc. N. Jersey*, Newark, 1901, 161-167.—**Liebermann** (J.) Regulierung eines vorstehenden Unterkiefers. *Wien. zahn-ärztl. Monatschr.*, 1901, iii, 567-573.—**Loewe** (M.) Moderne Mundwässer. *Centralbl. f. Bakteriolog.* [etc.], 1. Abt., Jena, 1901, xxx, 831-838.—**Lombard** (E.) Instruments pour la cure radicale de la sinusite maxillaire par la procédé de Luc. *Ann. d. mal. de l'oreille, du larynx* [etc.], Par., 1901, xxvii, pt. 2, 571-576.—**M'Coy** (J. C.) The extraction of crowded and misplaced teeth. *Pacific Dent. Gaz.*, San Fran., 1901, ix, 810-813.—**Macomber** (J. C.) The Richmond crown versus the Logan crown. *Dental Brief*, Phila., 1902, vii, 4-6.—**Maggs** (W. A.) and **J. L. Payne**. Notes on the dentition of the Sphenodon. *Brit. J. Dent. Sc.*, Lond., 1901, xlv, 1059-1065.—**Martin** (C.) Larynx artificiel. *Odontologie*, Par., 1901, 2. s., xiii, 575-582.—**Marvel** (E.) The use of ethyl-bromide as a primary anæsthetic to ether or chloroform. *Tr. M. Soc. N. Jersey*, Newark, 1901, 239-242.—**Mauclaire**. La cloroformisation, l'éthérisation et la cocainisation lombaire. *Gaz. d. hôp.*, Par., 1901, lxxiv, 1345-1348.—**Mendel-Joseph**. La phase parapulpaire de la carie dentaire. *Odontologie*, Par., 1901, 2. s., xiii, 582-585; 624-632.—**Merchant** (M. H.) A case of pathological condition of the antrum which terminated fatally. *Texas Dent. J.*, Dallas, 1902, xx, 13-15.—**Messenger** (H. W.) A simple method of crowning single-rooted teeth without laceration of the gums. *J. Brit. Dent. Ass.*, Lond., 1901, xxii, 681.—**Miron** (G.) Chancr sypylitique de l'amygdale droite; adénopathie concomitante; roséole maculeuse généralisée. *Presa med. rom.*, Bucuresci, 1901, vii, 358-360.—**Morgan** (G.) The importance of the interdental space. *Texas Dent. J.*, Dallas, 1902, xx, 21-23.—**Morgendorff** (E.) Verkleiving van de onderzijde der tong met de mucosa van den mondboden. *Nederl. Tijdschr. v. Geneesk.*, Amst., 1901, 2. R., xxxvii, d. 2, 1350.—**Mosing** (S.) [Treatment of harelip in infants.] *Przegl. lek.*, Kraków, 1901, xl, 505-507.—**Müller** (E.) Resultat der zahnärztlichen Munduntersuchung an der Sekundarschule Wädensweil. *Schweiz. Vrtljschr. f. Zahnh.*, Zurich und Genève, 1901, xi, 251-259.—**Noel** (L. G.) Management of the permanent superior incisors and



- cuspid. Dental Digest, Chicago, 1902, viii, 8-15.—**Nolf** (P.) La pression osmotique de la salive sous-maxillaire du chien. Arch. de biol., Liège et Par., 1901-2, xviii, 241-255.—**Noyes** (F. B.) Early embryonic development and the formation of the mouth and nose cavities. Dental Rev., Chicago, 1901, xv, 1124-1134. [Discussion], 1174-1176.—**Oakman** (C. H.) Some new uses for chloretone in dentistry. *Ibid.*: 1902, xvi, 28-37.—**von Oefele**. Mangelhaftes Kauen und die Eigenschaften der Faeces. Deutsche zahnärztl. Wehnschr., Wiesb., 1901, iv, 330.—**Otsuki**. Untersuchungen über die Aetiologie der Stomatitis aphthosa. [Japanese text.] Mitt. d. med. Gesellsch. zu Tokyo, 1901, xv, Hft. 15, 17-29.—**Ottinger** (R.) Conclusive evidence in relation to jumping the bite. Tr. N. York Odont. Soc. 1900, Phila., 1901, 75-88.—**Palermo** (A.) Le guide dans l'obturation des canaux radiculaires. Odontologie, Par., 1901, 2. s., xiii, 617-622.—**Parker** (F. M.) Teachers and teaching. Pacific Dent. Gaz., San Fran., 1901, ix, 793-802.—**Parker** (H. F.) The advantages of ethyl chloride as a general anæsthetic. St. Barth. Hosp. J., Lond., 1901-2, ix, 27.—**Parmele** (G. L.) Helps to success in practice. Internat. Dent. J., Phila., 1902, xxiii, 11-15.—**Patent** (The) Bill in Congress. Items Interest, N. Y., 1902, xxiv, 60-68.—**Patterson** (J. D.) Physiology; etiology, hygiene, prophylaxis and electricity. Report of Section IV, National Dental Association. Dental Digest, Chicago, 1901, vii, 987-1001.—**Pauly**. Troubles du goût dans le domaine de la corde du tympan par lésion basilaire. Lyon méd., 1901, xcvi, 799-802.—**Peirce** (C. N.) Bacteriology. Dental Digest, Chicago, 1901, vii, 964-969.—**Pierce** (N. H.) Treatment of certain purulent conditions of the antrum of Highmore through the natural openings. Phila. M. J., 1901, viii, 1098-1100.—The nature and histo-pathology of the epipharyngeal tonsil. J. Am. M. Ass., Chicago, 1902, xxxviii, 25-28.—**Polscher** (A.) Künstliche Singstimmen. Zahntechn. Rundschau, Berl., 1901, No. 488.—Geruch und Geschmack der Metalle. *Ibid.*: 489.—**Porcelli** (P.) La dentizione congenita e precoce. Atti d. Cong. pediat. ital. 1898, Torino, 1900, iii, 146.—**Protestation** des membres du Conseil d'administration de l'Ecole dentaire de Paris contre quelques allégations formulées au Conseil du surveillance de l'Assistance publique dans la séance du 20 juin, 1901. Odontologie, Par., 1901, 2. s., xiii, 599-608.—**Reeves** (W. T.) Bodies and color effects in porcelain inlay work. Dental Digest, Chicago, 1901, vii, 1005-1009.—**Rehne** (A.) Der Kampf um die Krankenkassen. Zahntechn. Rundschau, Berl., 1901, No. 495.—**Resektionsprothesen** des Unterkiefers. Odont. Bl., Berl., 1901, vi, 309-319.—**Réthi** (L.) Eine Radicaloperation der Kieferhöhle von der Nase her zur Behandlung hartnäckiger Empyeme. Wien. med. Wehnschr., 1901, li, 2436-2439.—**Rhein**. Heteroplasty. Tr. N. York Odont. Soc. 1900, Phila., 1901, 62-66.—**Riegner** (H.) Ueber einige Erleichterungen beim Abdrucknehmen mit Gips. J. f. Zahnk., Berl., 1901, xvi, 256-258.—**Ritter**. Der üblie Mundgeruch, seine Ursachen und seine Behandlung. Pp. 283-294, 12°. Halle a S., 1901.—*In*: Samml. zwangl. Abhandl. a. d. Geb. d. Nasen-, Ohren-, Mund-, u. Halskr., Halle a S., Bd. 5, No. 9, 1901.—**Robin** (P.) Eléments de thérapeutique pathogénique de la carie dentaire et insensibilisation non dévitalisante de la dentine. Rev. de stomatol., Par., 1901, viii, 545-558.—**Robinson** (H. B.) Lymphangiectasis of the tongue. Rep. Soc. Study Dis. Child., Lond., 1900-1901, i, 62.—**Röse** (C.) Gibt es Beziehungen zwischen Hodenbeschaffenheit und Zahncaries? J. f. Zahnk., Berl., 1901, xvi, 237; 245.—**Rogers** (L. O.) Chancre of the tonsil. Am. Med., Phila., 1902, iii, 58.—**Rose** (A. G.) Prosthetic dentistry. Dental Digest, Chicago, 1902, viii, 27-31.—**Rowley** (C. R.) Little ones in the dental chair. Dental Reg., Cincin., 1901, lv, 617-622.—**Rubrecht** (O.) Les dentistes et le projet de loi sur l'exercice de l'art de guérir. Rev. trimest. suisse d'odont., Zurich et Genève, 1901, ii, 264-327.—**Salomon**. Lithiase salivaire. *Ibid.*: 262-264.—**Salvas** (J. C.) A practical view of plastics. Dental Brief, Phila., 1902, vii, 1-3.—**Sapiezhits** (K.) [Development of the question of resection of the Gasserian ganglion.] Laitop russk. chir., S.-Peterb., 1901, vi, 677-698.—**Sauvez**. Observations d'anesthésie avec le somnoforme. Odontologie, Par., 1901, 2. s., xiii, 632-634.—**Schamberg** (M. I.) A statistical study of local anesthesia in dentistry. Dental Cosmos, Phila., 1902, xlv, 22-25. [Discussion], 50-53.—**Schröder** (H.) Modo di applicare la protetica odontistica nella regione facciale, con ispeciale riguardo alla protesi mascellare immediata dopo la resezione. Gior. di corrisp. p. dentisti, Milano, 1901, xxx, 290-355.—**Senn** (N.) Malignant disease of the parotid and regional lymphatic glands. Internat. Clin., Phila., 1902, ii. s., iv, 183-185.—**Sensibaugh** (W. C.) Isummification of the pulp advisable? Dental Brief, Phila., 1902, vii, 6-8.—**Sieberth** (O.) Zur Aetiologie der Pulpitis; Erwidern auf die Angriffe von Arkövy. Centralbl. f. Bakteriöl. [etc.], i Abt., Jena, 1901, xxx, 910-912.—**Smith** (A. H.) Dentine. Dental Rec., Lond., 1902, xxii, 3-6.—**Smith** (S. C.) Hemorrhage from the gums during pregnancy. Am. J., Obst., N. Y., 1902, xlv, 89.—**Söderberg** (T.) Nehány szó a nervocidinről. [Some words on nervocidin.] Magyar fogasz. szemle. A stomatol. [etc.], Budapest, 1901, v, 215-217.—**Somers** (L. S.) Acute pharyngitis of the streptococcal type. Medicine, Detroit, 1902, viii, 32-39.—**Spiller** (W. G.) and **C. H. Frazier**. The division of the sensory root of the trigeminus for the relief of tic douloureux; an experimental pathological and clinical study, with a preliminary report of one clinically successful case. Univ. Penn.

- M. Bull. Phila., 1901-2, xiv. [Discussion], 422.—**Spokes** (S.) The treatment of ingrowing upper teeth. Rep. Soc. Study Dis. Child., Lond., 1900-1901, i, 87-89.—**Stearns** (C. H.) Mallet as a source of energy. Dental Digest, Chicago, 1901, vii, 980-987.—**Steel** (C. H.) The importance of a proper selection of alloys for amalgam work. Texas Dent. J., Dallas, 1902, xx, 1-4.—**Stein** (A. E.) Ueber die Erzeugungssubkutaner Paraffinprothesen. Zahnärztl. Rundschau, Berl., 1901, x, Nos. 490; 491; 492; 493; 494.—Zur Statistik und Operation der Geschwülste des Oberkiefers. Arch. f. klin-Chir., Berl., 1901, lxx, 190-515.—**Summerlin** (W. A.) Preparations of cavities in the bicusps and molars. Brit. J. Dent. Sc., Lond., 1901, xlv, 1126.—**van Swieten**. Névrectomie dans un cas de névralgie du lingual d'origine traumatique. Ann. de l'Inst. chir. de Brux., 1901, viii, 160-162.—**Thielen** (B. F.) The noble metals, together with a special consideration of gold. Texas Dent. J., Dallas, 1902, xx, 8-13.—**Thollon**. Gomme et perforation de la voûte palatine, par syphilis acquise, chez un enfant en bas-âge. Languedoc méd.-chir. Toulouse, 1901, ix, 347-349.—**Thomas** (R. S.) A case of parotitis following an operation for appendicitis. Lancet, Lond., 1901, ii, 1796.—**Thompson** (A. H.) A study of comparative occlusion and its bearings upon orthodontia. Dental Cosmos, Phila., 1902, xlv, 9-16.—**Thomson** (St. C.) Two cases to show the desirability, in certain cases, of removing the tonsils by enucleation. Tr. M. Soc. Lond., 1901, xxiv, 302.—**Tracy** (W. D.) Restoration of a broken central incisor with porcelain. Tr. N. York Odont. Soc. 1900, Phila., 1901, 58-62.—**Trewin** (G. M.) The ideal crown. Dominion Dent. J., Toronto, 1901, xiii, 464-466.—**True-man** (W. H.) El metal fusible en el laboratorio dental. Correo. odont. internac., Madrid, 1901, vi, 2594-2602.—**Vergier** and **Abadie**. Sur un cas de gingivite à spirilles et à bacilles fusiformes de Vincent. J. de méd. de Bordeaux, 1901, xxxi, 779-781.—**Vigdorichik** (N. A.) [Causes of idiopathic ulcerative stomatitis.] Vrach. Gaz., S.-Peterb., 1901, viii, 689-691.—**Visick** (H. C.) A consideration of the relationship between superior protrusion and mouth breathing. Guy's Hosp. Gaz., Lond., 1902, xvi, 16-19.—**Voyles** (S. H.) Dental education. Dental Digest, Chicago, 1902, viii, 22-27.—**Wagner** (H. L.) Epipharyngeal lympho-sarcoma in a boy. Ann. Otol., Rhinol. and Laryngol., St. Louis, 1901, x, 343-345.—**Walkhoff**. Die Prioritätsfrage der Dentin-anaesthesia durch Kohlensäure. Zahnärztl. Rundschau, Berl., 1901, x, No. 493.—**Watson** (G. W.) Adrenalin chloride. Dental Rec., Lond., 1902, xxii, 6.—**Wedelstaedt** (E. K.) Faulty environment. Internat. Dent. J., Phila., 1902, xxiii, 1-9. [Discussion], 33-40.—**Weems** (J. M.) Oral surgery and oral hygiene. Texas Dent. J., Dallas, 1902, xx, 5-7.—**Weiting** (J.) Ein Verband für Unterkieferfrakturen. Centralbl. f. Chir., Leipzig., 1901, xxviii, 1260-1262.—**Wells**. Pastillas comprimidas de cocaína y cloruro sódico para inyecciones hipodérmicas. Correo odont. internac., Madrid, 1901, vi, 2546-2552.—**White** (G.) Amputation of the roots of teeth to cure abscess. Dental Digest, Chicago, 1902, viii, 21.—**Whittles** (D.) A case of abnormal eruption. J. Brit. Dent. Ass., Lond., 1901, xxii, 676.—**Wolff** (J.) The early operation for congenital cleft palate. Ann. Otol., Rhinol. and Laryngol., St. Louis, 1901, x, 358-384.—**Wood** (G. B.) The pathogenesis of lacunar keratosis of the tonsil.—Univ. Penn. M. Bull., Phila., 1901-2, xiv, 417-422.—**Worms** (F.) L'histoire de l'art dentaire. Odontologie, Par., 1901, 2. s., xiii, 535-572.—**Williams** (H. L.) A note on excision of roots. Dental Rec., Lond., 1902, xxii, 1-3.—**Witzel** (A.) Meine Methode der Behandlung der Alveolarzahnfleischfistel. Zahnärztl. Rundschau, Berl., 1901, x, No. 491.—**Young** (J. L.) Some considerations in modern bridge-work. Dental Cosmos, Phila., 1902, xlv, 54-70.—**Zielinski** (F.) Nowy sposób robienia szczotek do zębów. [New way of making tooth-brushes.] Przegl. dent., Warszawa, 1901, iv, 164-170.

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING JANUARY, 1902.

- Jan. 14.—No. 691,067, to HENRY C. MILLER. Grinding or polishing cone.  
 " " —No. 691,072, to LOUIS ARNDT. Former for air chambers for dental plates  
 " " —No. 691,187, to A. W. SCHRAMM. Switch mechanism for electric motors.  
 " " —No. 691,188, to A. W. SCHRAMM. Means for regulating electric motors.  
 " 27.—No. 691,694, to A. ADERER. Dental pliers.  
 " " —No. 691,581, to A. BAUMEISTER. Dental floss holder.  
 " " —No. 691,559, to H. D. JUSTI. Mount for diatoric teeth.  
 " " —No. 691,695, to A. ADERER. Case for dental instruments.  
 " 28.—No. 691,753, to FREDERICK W. DEAN. Hand-piece for dental engines.  
 " " —No. 691,763, to WM. E. HARPER. Dental instrument.  
 " " —No. 35,610 (Design), to JAS. B. VERNON. Dental instrument holder.







DR. HENRY B. NOBLE.

# THE DENTAL COSMOS.

---

VOL. XLIV.

PHILADELPHIA, APRIL, 1902.

No. 4.

---

## ORIGINAL COMMUNICATIONS.

---

### MANAGEMENT OF THE INFIRMARY CLINIC IN DENTAL SCHOOLS.

BY G. V. BLACK, M.D., D.D.S., SC.D., LL.D., CHICAGO.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa.,  
December 31, 1901.)

**I**N the consideration of the management of the clinic of a dental school we should have a clear appreciation of what is to be accomplished, and of the natural or artificial hindrances to its fulfillment. The object of the infirmary clinic is the education of students in the practical features of dental practice. Every arrangement of whatever nature should be made with the view of contributing to that end. In doing this, however, many side issues come in for consideration that will not down without serious evil to the educational interest, and that must be worked out in such a manner as will, all things considered, best conserve the interests of instruction. One of these is the financial interest. At the present time the income from the clinic is regarded as essential, probably, by all of our dental schools. Having said this much, I shall not discuss the matter further except as to arrangements for the incidental collection of these infirmary fees.

Another matter in this connection that might well be the subject of a separate paper is the arrangement of the course of instruction in operative and prosthetic dentistry with mutual reference to the didactic and the clinical instruction of students. It is in this that many of our dental schools are lame. But as other things are expected of me in this paper, I cannot now stop to discuss it further than to say that the whole of the teaching of either of these departments should be under the control of one person from the beginning of the freshman year to the close of the senior year. I do not mean by this that one person should do all of the teaching in either of these departments; but I do mean that one person (or, it might be, several in consultation) should plan all of the teaching in either de-

partment and have constant jurisdiction over the progress of the work in all the grades, to the end that the teaching in its plan of presentation be a continuous whole. No one teacher should use a different nomenclature from another. No one teacher in the lower grades of operative or prosthetic dentistry should teach anything that will be dropped as superfluous in the next class, nor in a manner that will not be followed by the next teacher who takes the class. This holds good in all respects whether the teachers be few or many, whether the students be few or many, and includes the demonstrating force in each department; no matter if this force be composed of one person or of many persons,—all must act as nearly as a unit as possible in order that the best results may be attained. All of this is necessary to the best results in the infirmary clinic; especially is it necessary that the demonstrating force be so trained in their work that they may follow closely the didactic instruction.

With these statements I shall leave this part of the subject, and proceed to that which seems to have been more especially set apart for the subject of this paper: *The management of the infirmary clinic with reference to its records.*

One of the first things now to be considered is the legal status of the college student in the clinic. In the legal sense the student has no rights in the practice of dentistry except as he is directed by instructors who have acquired that right. His instructors stand to him in the position of legal guardians of all of his rights in practice. Therefore the student can do nothing in practice, legally, without the direct oversight of his instructors. This is true of the student in the office of the practitioner as well as in the school. This point being conceded, the first care will be to make such arrangements for the infirmary clinic that every patient comes first into the hands of an instructor for the examination of the case and the first direction of the student in its treatment. From this point to the final discharge of the patient each step of the operations performed must be under the guidance of the instructors. This is just as necessary in the educational sense as in the legal aspects of the case, also for the reason that the student is to receive instruction upon point after point as he proceeds. The whole arrangement of the clinic must be made with both these ends in view. These should provide for a *record* of each step in the procedures in such form that the whole can be brought in review at any time after the operations are completed, showing that this guard has been kept in each individual case. This kind of guardianship is necessary in the legal sense for the protection of the school in case of any suits for malpractice in its clinic. If this care is clearly shown the courts will be very slow in finding against the school; but if, on the other hand, it should appear that this care has not been exercised, such a case might easily result in heavy damages against the school; for the decision in the case would hinge largely on the question whether or not reasonable care and supervision had been exercised by those in authority. This is also necessary in the educational aspect of the case in order that the education of the students and of each one individually may proceed in a systematized way, and be guarded at



every point. None of this should be left to the memory of either instructors or students, whether the classes be large or small.

*What should be the record of the steps of procedure? or at what points in the procedures should records be made?* As far as possible these should be selected at natural breaks in the procedures, or where changes are made from one part of an operation to another, and especially points where the student will require other material in order to continue, and to obtain which he must consult his demonstrator. All such points should be made landmarks past which students should not go without consultation, for they are sure to take matters in their own hands and proceed if not rigidly stopped. Take, for example, operations for filling teeth. I should require these. First the examiner determines approximately what filling operations are needed for patients individually as they present themselves, and makes a record of his findings in duplicate upon an assignment slip. One copy is filed under the student's number in a filing case kept for the purpose, and the other is delivered to the student to whom the case is assigned with some general directions as to its treatment. In making this assignment the examiner has due regard for the difficulties of the case and of the competence of the student selected to handle it. The possession of this assignment slip is the evidence of the student's right to operate for that patient. With it and the patient he enters the operating room, either at once or at some subsequent time as may be arranged, and also from time to time as may be necessary, for it is not necessary that the patient go again to the examiner.

Having placed his patient in the chair he makes his own examination, comparing his findings with those of the examiner, and possibly chooses his course of procedure for that sitting. Then he calls his demonstrator for advice and is in frequent consultation with him from that time to the completion of the operation. Now, as the demonstrator cannot be always at the student's side, and it is not desirable that he should be, it is necessary that certain stops or hindrances be imposed to his progress past certain points without examination of what he has done, to prevent the student taking matters too much in his own hands. Therefore no material should be obtainable for making the filling except by order of the demonstrator in written form, requiring that he be called for this purpose. Then the preparation of the cavity must be examined and approved, or such changes ordered or demonstrations made as will lead to its approval. Then the student's *record slip* is made out and the approval of the preparation of the cavity recorded with the demonstrator's signature. At the same time an order is made out on which the student draws the necessary material from the office, collecting the price from the patient and paying it to the cashier, and it being receipted for by the cashier by punching the figure from the patient's receipt which is attached to the operative record slip. Note now that the material is drawn upon a special *order slip* that must bear the number of the record slip upon which it was issued. The two must be presented together at the office. The order slip remains at the office and its duplicate with the demonstrator, and

from these the financial record is made. The record slip and patient's receipt is retained by the student, with the credit mark for the cash paid upon it. Then he can proceed with the filling with such consultation as may seem necessary. In case large gold fillings are being made it is common with us for the demonstrator to issue but a part of the gold necessary on the first order, so that the student may not escape inspection at a point during the progress of the work, and also because of the difficulty of choosing accurately the right amount of gold.

When the filling is finished the student is estopped from discharging the case until the demonstrator has examined and passed upon it, has graded it and awarded the points credit to the student and made the record on the *record slip*. This amounts to an absolute hindrance to passing the demonstrator at this point, for it is this record slip turned into the office upon which the student obtains credit for the minimum requirement of operative experience in filling operations before graduation. If he discharges his patient without this examination he receives no credit. This should be positive in all cases and without the possibility of evasion. When this is all completed the receipt for the money paid is detached from the record slip and handed to the patient, who is discharged for the day. The record slip is then returned to the record clerk to be recorded on the student's record page. This completes the individual filling. Every other filling operation is like it except that one assignment is all that is necessary for the consecutively arranged operations for one patient.

For this *four slips are necessary*; and these may be on the personal plan or on the numerical plan as will be explained later.

The first is the *assignment slip* which should be made out in duplicate, the examiner filing one under the student's name or his number, and delivering the other to the student. No student is allowed to operate for any patient without displaying this slip, which is the evidence of his right. In every class of a considerable number of students some will be found who do not get along well with their patients, and as a result their patients disappear from the clinic before the work assigned is completed. Such students invariably complain of a lack of patients for whom to operate. In any case of complaint a comparison of the assignment slips filed by the examiner with the credits to the student on his record page will expose the true nature of the difficulty.

The second and third are the *operative record slip* and the *patient's receipt*, which are attached together until the completion of the operation. This record slip is necessary, with the record in due form, from which to make up the student's records of experience in operating, without which in satisfactory amount no student can graduate. This should bear on its face a record of the individual cavity, the approval of the preparation of the cavity, the amount and kind of material ordered for the case, the points awarded for operative experience, the grade of the completed work, and the initials of the demonstrator who had it in charge; all of which will be posted upon the student's record page.



The fourth is the *operative order slip* from which the finance account of the clinic is made up. This is also in duplicate and has consecutive check numbers. One copy is given to the student on which to draw his material, and the other is retained by the demonstrator and turned directly into the finance office at the close of the day. The finance clerk compares these with those on which the students have drawn their material, to see if all has been correctly done and that the cash agrees with the amount the slips call for. We have found this necessary to prevent some evil-disposed students from imposing upon the clinic by collecting from patients, using their own material and putting the money in their own pockets. By this plan any attempt in this direction is at once detected, accurately located, and the guilty party immediately exposed.

The *student's record page* is a page set apart to the individual student in the operative record book. The same book is also used for the prosthetic records, and it is our custom to place the two pages opposite so that opening to one displays both. These pages have ruled columns for each item of credit to the student on the record slips, in which these are posted in full, with the name of the demonstrator having the oversight of each case, etc., making a concise, but very complete record of what has been done.

THE PROSTHETIC DEPARTMENT.—The assignment slips should be the same for both the operative and prosthetic departments, but the other slips should be different because of the difference in the credits to students, the difference in the material required, and the difference in the plan of collecting the fees in the two departments. To place all of these on one slip so as to use the same for both would make it unnecessarily cumbersome. Neither can the collection of fees be managed in just the same way, for the reason that the student will want material at times when the patient is not present. This makes it necessary that some fixed portion of the fees in this department be deposited at the beginning to prevent losses, and that this be arranged for each case with the proper record. Otherwise than this, the same principles should control in making out the prosthetic record slips as have been explained for the management of the operative department. That is to say, stops for examination by the demonstrator should be imposed at every natural change in the procedures, whether the piece be a crown, a bridge, or a plate. In the case of an ordinary Richmond crown these stops may be at the time the root is prepared and an order slip is to be made out for the gold for the band; when the band is fitted and the gold is to be ordered for the cap, and the tooth selected; when the tooth is ground to place and the gold is to be ordered for the backing; and the rest on a similar plan.

Each one managing such a department would naturally have his own ideas as to just where these enforced stops for examination and special demonstration should be placed; and I do not know that the placement of these has any special bearing on the general management so long as they are sufficiently frequent to prevent students taking matters too much in their own hands and getting out pieces of such work without sufficient supervision and demonstration for



their proper education, and the needful protection of the interests of infirm patients. But it is the duty of every school to see to it rigidly that such arrangements be made as will subserve both these interests.

The particular wording upon the slips will of course depend upon the ideas of the different instructors having the departments in charge; and particularly upon the credits arranged to be awarded to students, and the material that is supplied them by the school. I do not mean that these are matters of indifference, but rather recognize that in the present stage of the development of dental educational methods it is too much to expect that the various dental schools will agree on all of these points. Harmony in these matters is, however, very desirable, and it should be the object of all those interested in dental education to enter into the discussion of these plans with the view to the development of a system that can be generally adopted in dental school work. The cardinal points which I have tried to illustrate thus far may be named as—First, such checks as will bring the student sufficiently often into consultation with the demonstrator to well serve his educational needs. Second, such checks to the progress of the work without supervision as will well protect the interests of the infirm patient from questionable procedures by students. Third, the keeping of such records of these procedures as will serve to bring in review each individual case at any after time and show to any court of law that the interests of both student and patient have been duly guarded at every stage of the operation. Happily these coincide in such a way that when the one is well done the other two will also be cared for, they are coincident interests. No dental school should do less than this; for this much is necessary to the proper guarding of the education of the student; this much is necessary to the proper guarding of the interests of the infirm patient, and the records are necessary to show that these have been well done, and to protect the school against damages being awarded in case of suits being brought for fancied wrongs to patients.

Some other records are necessary to render these complete under all of the conditions that are liable to arise in the progress of the work in dental schools. Patients will come with complaints having forgotten the student's name, and no one may remember about the case. Students will occasionally lose their assignment slips, and will have forgotten the name and address of the patient. Patients occasionally come to an engagement having forgotten the name of the student and no one knows whom to call. Indeed, all manner of crooked things will come up that require immediate disentangling. The best scheme for this is the patient's *index register*, if the personal plan is used, or the patient's *index register* and the *numerical register*, if the numerical plan is used.

The best patient's index register by far is the card index. In keeping this, the examiner writes the name and address of the patient on an ordinary catalogue card, adding the name or number of the student to whom the patient is assigned, and files these alphabetically in the ordinary filing case. During the work of the

day these cards may be set away as they are written, and filed in order in the case after the other work is over in the afternoon. When both the name of the patient and the name of the student is written on all of the slips and on the student's record page, consultation of this index will serve as the key to the whole account whenever the patient's name is known. In case the patient is to be found, the student's name being known, the name will be found either on the student's record page or on the assignment slip filed by the examiner.

This personal plan requires that the name of the student, and the name and address of the patient, be copied from slip to slip throughout all of the procedures, and finally upon the student's record page. It is desirable that this be avoided, and the amount of writing reduced to the lowest amount consistent with accuracy in the accounting; this is best accomplished by the numerical plan. In this the patient's index card is the same, except that consecutive numbers are printed on the cards, and in writing these they are taken from the pack in numerical order. Otherwise the patient's name and address and the student's number only is written on the card as before, and the card is to be filed in the same way. But in this, the number of the card becomes the number of the patient, and takes the place of the patient's name and address on all of the slips and on the student's record page. Otherwise, all of the slips and the student's record page is the same as before; no other change need be made in them whatever.

This plan saves a large amount of writing, for we have found that by the personal plan the name and address of the patient is written from seven to eleven or twelve times for each operation. In the numerical plan it is written but twice, and afterward designated by number. But in the use of the numerical plan, a *numerical index register of patients* should also be kept. This is the ordinary book with the ruled lines consecutively numbered, used by commercial houses that use the numerical plan of book-keeping. In keeping this book the examiner writes the index cards and sets them away as before during the busy part of the day, but before filing them away he copies the name and address upon each card, with the student's number, upon the appropriate line in this numerical index book. Then when it becomes necessary to look up the name and address of any patient for any purpose, the number being known, it is quickly found by reference to this book. I am of opinion that this is the most complete system of book-keeping for the dental school clinic that has yet been devised, and will on the whole best subserve the needs. With this, if any fact is known of any given case, all of the records of the case can readily be brought in review.

I suppose, with many, the question will come, How much of this book-keeping can be left out and still leave a sufficiently complete record? About all I can say is that this question will have to be answered by each school for itself. I know that the records of many of the schools are very incomplete at the present time, and are sadly in need of improvement.

In the management of a dental school clinic there is nothing more important than the collection of fees for operations. These fees, as dental schools are now organized, and with the tuition charged, are necessary to the life of the school, and their collection is managed in as many ways perhaps as there are schools. For the regular maintenance of the clinic there should be one regular system of fees in each department, that should be constant in its application and from which every deviation should be according to a well-understood plan that is constant. There should be absolutely no escape for students who violate these rules.

In my opinion it is best to fix the price of the material used at such a figure as to give an income that is satisfactory, and have no other charges whatever. In this case an order must be written for this material and the cash must accompany it; then no mistake can be made, and no evasion practiced. It is best that those operations which require no material be done free; then if the school sees fit to remit a portion of the fee to its students who become patients, or to needy persons as a charity, let every such case be judged of and done by order issued by some one person having that matter in charge, and by no one else. With us, this is done by a demonstrator designated as "the O. K. man" who writes "free" or a given reduced price, on the face of the order slip, adding his signature. That ends the matter. No reduction whatever can be had in any other way.

I am of the opinion that the arbitrary fixing of prices, so much for this filling and so much for that, without definite rules, should have no place in dental schools. Such a plan will inevitably give rise to the discussion of the matter of the justice of the charge between students and patients, and always to the detriment of the clinic. When the prices are fixed and invariable, such discussion disappears. No one can collect these fees more safely for the school or for the good name of the clinic, than the student himself under these fixed rules.

---

## THE PAST AND PRESENT IN DENTISTRY.

BY C. N. PEIRCE, D.D.S., PHILADELPHIA, PA.

(Read before the Buffalo Dental Society, January 16, 1902.)

YOU have honored me with an invitation to meet with you at this annual reunion and to speak upon some subject of my own selection. In contemplating this rôle, a pertinent suggestion is forced rather emphatically upon the open field: Why not review our own profession, its past and present condition?—retrospect, with its present prospect; adding a glance into the near future, educationally.

You have one or more members who like myself can without aided vision see very clearly the channels through which during the previous fifty years we have struggled to reach our present goal. Fifty years in world-growth is hardly a measurable period, but rated in the advancement of the healing art it embraces nearly two



generations, so that in every department, in practice as well as in education, marvellous changes have been wrought.

Comparing the office or operating-room of 1850 with that of to-day, the former would hardly be recognized as being fitted for the same professional work. Electricity has so revolutionized our practical mechanics that much of it requiring great skill and care is now done by its application to every conceivable instrument. In the well-equipped dental office to-day, within reach of the hand, a button is pressed and the mouth flooded with light; another, and the drill is revolved with lightning speed; another, and the mallet is making blows too rapid for the brain-cells to count; another, and the lathe is almost noiselessly performing all the operations essential to prosthetic dentistry, with such dexterity that time is quite annihilated.

In operative dentistry the soft gold foil has yielded to the various forms of cohesive and plastic gold, and the heavy hand-pressure is superseded by the delicate manipulative processes confined almost exclusively to the fingers, which are so skilled that pressure is hardly recognized by the patient.

Whatever has been accomplished in promoting the advancement of the art can be portrayed in the effort to forge those links in its history that will connect the past with the present, trusting that more appropriate methods, with better results, have been the reward of fifty years of continuous effort to elevate the profession in its material equipment as well as intellectual advancement.

In estimating the condition of dental education sixty years ago, the fact must not be overlooked that there were exceptional men in every large city; they, however, did not represent the majority, but only an exclusive and very small minority. To correctly value the conditions of that period we must appreciate the fact that the average dentist was financially poor, and often with limited general education and necessarily without position or prominence. Dental ethics was unknown, the dental laboratory was as exclusive and private as an inventor's sanctum, and every operation was guarded with as much jealous care as if thousands of dollars were liable to be sacrificed by the side glance of a layman.

The few who practiced the art, however unskillfully, greatly feared that any addition to the ranks would be an encroachment, not only upon their exclusive privilege, but also upon their limited income. An application for instruction, or student position, was treated with grave and serious consideration, and the price named in response to so bold an inquiry was almost prohibitory and much in advance of the one agreed upon by subsequent conferences.

One thousand dollars for three months' tuition, six hundred for six months, and four hundred for two years.—these were moderate fees. Of course the longer the time of instruction the more service the preceptor would hope to get from an intelligent student, so that the profit of labor thus acquired was a factor in the arrangement. So in evidence was the antagonism in the profession to increasing the number involved in its requirements, that when a charter was sought for the establishment of a dental college nearly

every dentist in the city of Philadelphia signed a petition for presentation to the legislature begging that it be not granted, and for the reason assigned that it would bring into this occupation many in conflict with those already so engaged, and thereby not only seriously interfere with the stability of those in practice, but also disturb their income and risk the perpetuity of the industry. So pronounced was this opposition that the project was abandoned for five years. But, finally, on second effort, the charter was obtained and a college was inaugurated with, theoretically, a four months' term extending from November 1st to March 1st, but practically less than three months, as students were admitted until December 1st and lectures closed by February 15th for examinations and preparation for commencement, a two years' course only being required, while all who had been in practice for five years previously were entitled to graduate with one year in college and this was often a scant year.

Dental education, however, could not be an exception to evolutionary processes. The curriculum of other institutions, in response to the demand for more complex and thorough instruction, was gradually yielding, and what less could dental schools do?

Greatly be it to the credit of professors in dental colleges that they were not insensible to this undercurrent that was pushing inward and upward to finally lift to the surface institutions with not only more months in the term but more years in the course, until the student holding the degree from a well-organized school at the present day will have had his three years of seven collegiate months each, and with this he should be the peer of his colleagues in dentistry regardless of the institution in which the scholastic term may have been spent.

Such is the hope of those who are watching with interest and pride the evolutionary movements of the education of the dental student.

A teacher for many years, with unabated interest in the methods adopted for the elevation of a profession that is so interwoven with one's being that a divorce is not only not thought of but is impossible, questions now as to whether the methods suggested to-day by the associations of Faculties and Examining Boards are the wisest and the best adapted to the accomplishment of this sought for and most desired elevation.

Associating for years with these teachers holding prominent positions, the best element in the profession, has given me the highest regard for their honest and earnest desire to promote its advancement, but with all their best wishes and lofty aspirations they are human, and liable to misinterpret the trend of growth and the means best adapted to accomplish the purpose.

Let such promoters of methods remember that they are providing for the mental powers of those whose lives are to be spent in the field of art and mechanics, and that what they need above all is the power of seeing things as they are, of drawing conclusions from particular facts without reference to authority. These men and women students in dentistry will many times have to "weary



their souls with work, and eat their bread in sorrow and bitterness." With this practical life before them, of what earthly use can the smattering of Latin, which is required, be? It is simply a fearful attempt of intellectual gymnastics. Classics! classics! you respond,—the history of ancient Greeks and Romans! I have not the remotest desire to depreciate the earnest and enlightened pursuit of classical learning, nor deprive the student for one moment of the beauty of the poetry that may be brought into the life with such an extended education. Not on any account would I discourage one having time and talent from pursuing the great attractions found in the science of philology.

But most dental students are struggling up a steep incline, by a bad road with stone and ruts, and in short-windedness, so that the charms of a scene at the top, however grand and alluring, can be but poorly appreciated. Indeed, it takes a strong man to keep in mind the beauties in anticipation while he is overcoming the obstacles on the road. Of all that tread this rugged pathway how many reach the ideal? How few indeed there are who can possibly be benefited with this little smattering of a dead language!

If the study of the classics can form a part of an early education, so that as boys and girls they can be impressed with their beauty and simplicity while young, the knowledge may then form the basis of a liberal education; but in student days, years of maturity, with the one idea of an occupation for life, the verbal and grammatical peculiarities of Latin are rough boulders in their progress, almost insurmountable, and of no more value in the preparation of the student for his daily toil than committing to memory senseless scraps of Greek or English regardless of their application or worthlessness. A year after all these exercises have been so imperfectly learned, what has he to show for them? It is doubtful if he be, six months thereafter, competent to interpret or correctly translate a passage from any Latin author, and he will certainly loathe the sight of any such book.

I can interpret the inward thought of a dozen of you gentlemen around me all asking as with one voice: What would you have the applicant for dental education know? or, Of what shall his examination consist before he is allowed to pursue his special studies? I will give you a suggestion, not binding at all. I would have him know physical geography, or, as the Germans call it, earth-knowledge,—a general knowledge of the earth, what is in it, on it, and about it: What is the moon, and why does it give light? What is the water, and its relative quantity compared with the land; what makes the waves and the tides of the sea? Learn something of the distribution of animals and plants, and the uses to which some of the latter can be applied. Physical science, embracing the relation of forms to each other, also as science deals with causes and effects. Comparative anatomy and physiology are invaluable. Familiarity with any one of the above subjects would be something tangible and extremely valuable, through not only the professional life, but through the whole life of the individual. These are all subjects of interest, and with a competent teacher could be readily understood by the ordinary mind.



Any of you can easily appreciate the pleasure, the solid satisfaction, there is in being able to locate a tooth that is handed you. In what animal, for instance, did it serve a purpose? Was its function piercing, cutting, lacerating, or grinding? Was it simply prehensile or was it triturating in function? These latter are questions in which a dentist has a direct interest, adding not only to the pleasure of his pursuit, but being of vital importance if he should be at all desirous of knowing about the origin, development, function, and durability of the organs he is attempting to save.

Would that our critics and teachers knew enough to judge wisely of the knowledge that is most valuable, and thereby to save themselves from the unfortunate position of placing unnecessary burdens on our students, and being themselves in the condition of sliding into a rut or groove simply because others with different interests and talents have traveled successfully therein before.

A pertinent inquiry right here suggests itself: Is there not danger of unwise requirements being responsible for the establishment of other educational institutions much inferior to our present schools? We have already in Philadelphia parties advertising themselves as dental institutions and colleges who are educating students,—a limited number, to be sure,—in prosthetic and operative work without reference to previous acquirements or intellectual training, and in the near future it is predicted that these embryo schools, we may call them, will obtain from the legislature a charter empowering them to grant degrees of efficiency based entirely on this practical work, just as has been done and is being done in medicine for the ophthalmologist, osteopathist, Christian scientist, and will soon be for the laryngologist and rhinologist. It needs no prophetic vision to anticipate the result this will have upon our profession. The public will not, the public cannot, discriminate. They desire the service rendered in a workmanlike manner and it is of little consequence to them whether the one performing their work in a satisfactory manner reads Latin or even English correctly. This is a condition the profession may have, will have to meet,—one that is sure to come.

This trend of thought need not be further pursued; what has been said is enough, for those who read and think, to see that there is always room for different views upon a subject so important and vital as that of dental education.

Now a few words on what experience brings to us.

Fifty years of activity in an industry gives one the opportunity of seeing many changes,—much of interest, much that one accepts as not only revolutionary, but evolutionary. Better results are now obtained with less expenditure of force, and this should always be the aim, and must come as the inevitable as we reach toward a higher, a more stable method of procedure.

You all recognize that fifty years of continuous, of successful labor in any industry impresses one with the fact that the virtue, the secret of prosperity, is perseverance, integrity, and temperance. More than this lesson you know is taught,—it teaches one also that adversity has the great value of engendering and encouraging

fortitude, and with this a man can set his teeth and hold on. Few indeed have had undisturbed success; in most lives many times has fortitude been taxed to its utmost, but pluck always pays. There are those of whom we might say they cannot be killed. They are like the legendary cat, with nine lives,—nothing can hold them down; no calamity, save death, will check their activity. When instances of this kind come before us, they fill us with inspiration, they invigorate us. Dentists who have successfully practiced their occupation for fifty years must have had perseverance and energy, and what is life without these?

We may occasionally find men's lives and minds too, filled with vain opinions, flattering hopes and false valuations, but, with these in control, what have we for a basis save poor shrunken souls, filled with sickness and melancholy! Better by far is it to have years piled upon years and physical strength diminished than to lose that natural endowment, energy. This, however, when once ingrafted upon the soul cannot well be destroyed. It is an invaluable impulse of nature that has with it fortitude, and a fortune in it if not with it. You may change its direction, its line of effort, and some of it may be dissipated in unwise action, but it cannot be destroyed or annihilated. Those having it take the good that comes to them, prize it, and thank the fates for it; they take the evil also, learn what they can from its sad lesson, and are thankful for that just the same, for it is oftentimes more valuable than the good, as it brings with it wisdom. You all know that to be successful, the bitter must come with the sweet,—one side only is not education. Pleasure we get out of pleasant things and profit out of profitable things.

My friends I have detained you with thoughts which you may deem of little value—I might have written, and it probably would have been of greater interest to you had I written, of your own prominent members,—your men of letters shall I say? Certainly your men of knowledge; men shunning the trivial, the inadequate, the fragmentary, with detestation of shams and with directness of speech; men prolific in ideas that are worthy of consideration and of preservation; and men, if not capable of governing the world, certainly capable of governing a dental society and getting out of it all there is in it. I have great admiration for men who think for themselves and who at the same time appreciate the merits of an antagonist. You do not desire to assault a man without strength any more than you would get in the path of a blind man. It is a fearful strain to kick against nothing, and wonderfully mortifying to lose one's temper with a pygmy.

Now I have said enough, but just one word more. Some one has said, and said wisely,—I think it was Bacon: "The good things which belong to prosperity are to be wished for and enjoyed, but the good things that belong to adversity are to be admired and treasured."

"Prosperity is not without many fears and doubts, while adversity is not without its comforts and its hopes." He that gets out of both all he can will not die of melancholia.

You are told to forgive and love your enemies. This I know would be the advice of our friends, especially the elderly ones with us to-night, but I say unto you, Forgive your friends, and more especially this individual one, who has detained you so long, and toward whom you have been so patient in listening to his story.

---

## THE HUMAN FACE AND ARTICULATE SPEECH DIVINE.

BY GEORGE E. JOHNSON, D.D.S., FORT WAYNE, IND.

(Read at the third triennial Tri-state meeting at Indianapolis, June 4, 1901.)

MUCH has been written on "human temperament in relation to the teeth," "the law of correspondence," "typical tooth-forms," and "dental prosthetics," but nothing in the literature pertaining to dental science has been written on the question, Whence did the races and temperaments spring, and whither are they tending? So I have taken up a line of thought which I trust will stimulate every member of our profession to a deep consideration: "The Human Face and Articulate Speech Divine."

Nature in the performance of all her wondrous works moves in cycles and under fixed laws, with few exceptions. The earth, moon, other planets, and comets have their cycles, and even history repeats itself. The cycle of which I am about to treat dates way back into prehistoric times, and we are now just near the point, or rounding the curve, on the homeward bound.

From what type did the races spring? Will they return to that type? I answer "Yes," in the light of the science of anthropology and human reason.

An architect in laying his plans for a massive structure is very careful in providing a foundation in proportion to the height and weight to be sustained. The structure I am about to build must rest upon the races of mankind and will reach all the way up to heaven, and the master-builder is divinity, for, in the language of Hamlet, "There's a divinity that shapes our ends, rough-hew them how we will." There is not a face in any type of any race which does not show the lines or work of divinity; there is not a human voice or articulate speech which does not reveal the sweet sounds of divine purpose.

As one flower differs from another in size, grace, beauty, and fragrance, so with the flowers in the garden of life, the human faces divine. As some stars outshine the others in brilliancy, so some human temperaments exceed others in attractiveness, but as each star belongs to the mighty constellation and has its place in nature, so with each individual of mankind, whether he belongs to the primary, the sub- or mixed races, the basal, dual, or complex temperaments. They did not come by chance; they are all the products of natural laws. The student who would understand how the races of man were formed and how they peopled every quarter of the earth, has much to study in science



and natural laws. He should take up geology, biogenesis, biology, and archæology, but the most important are natural laws governing growth, degeneration, heredity, environment, climatic influences, reversion to type, and the onward march of civilization from an ethnological point of view.

The age of the earth, or the period at which it was launched into space, is ever an interesting speculation. Some eminent geologists have estimated that it was a hundred thousand years ago, but this is merely speculation from the change in temperature at different depths and elevations and of heat dissipation from the surface of the earth.

Geology establishes a principle which is the very foundation of the science of anthropology. There are stones bearing the marks of man's work found in England and France in the beds deposited before the last glacial period.

Some conception may be formed of the great age of the earth and the antiquity of man, when we stop to think that where we now stand, yes, the whole northern country, was once covered with a sheet of ice or moving glacier from twenty-five to hundreds of feet in thickness, and in mountainous regions the lateral moraines reach a height of two thousand feet, showing us that this whole country was swept by a moving, viscous, semi-solid mass before the age of the great forests.

I have had the very great pleasure of visiting the glacial delta terrace at Trenton, N. J., where Dr. Abbott has discovered over four hundred implements of the palæolithic type. I have also visited Nampa, Idaho, where the miniature image was pumped up with a sand-pump in sinking an artesian well by Mr. Kurtz in 1889. "The strata passed through, included near the surface, fifteen feet of lava. Underneath this, alternating beds of clay and quicksand occurred to a depth of three hundred and twenty feet, when there appeared indications of a former surface soil lying just above the bed rock from which the clay image was brought up by the sand pump," and Professor Wright says, "At present I can only say that the amount of erosion since the lava eruptions of western Idaho is not excessive, and very likely may be brought within a period of ten or twenty thousand years." So you will notice, according to Professor Wright, of Oberlin, man is of great antiquity, and his works are found all over the world from the palæolithic period to the present.

Going back into the prehistoric ages to genesis, I quote the following from Professor Drummond, in his "Ascent of Man": "Life to an animal or to man is not a random series of efforts. Its course is set as rigidly as the course of the stars. All its movements and changes, its apparent deflections and perturbations, are guarded by unalterable purposes." Drummond further says, "Evolution is seen to be neither more nor less than the story of creation as told by those who know it best." And, "Every step in the proof of the oneness in a universal evolutionary process of this divine humanity of ours is a step in the proof of the divinity of all lower things, and what is of in-

finitely greater moment, each footprint discovered in the ascent of man is a guide to the step to be taken next."

We do not pass laws in nature; we are contented and happy if we can discover and apply them, for they come from the great Lawgiver, the Master of creation.

The weight of evidence in the science of biology is against spontaneous generation and special creation of man, but he is none the less divine, and one of the first laws of biogenesis is that life can only come from the touch of life. And the inorganic world is separated from the organic by barriers never crossed. There has ever been a broad gulf between the dead and the living, and yet they are inseparable, for without inorganic we could not have the organic, but as to the mystery of the binding tie, science is silent. The Creator has reserved that for his signature, and we cannot make a draft on the bank of life without the indorsement of the Almighty God. The Creator will not honor a forged check.

As I stated in the beginning of my work, nature moves in cycles in the performance of all her functions or works, and the diagram I present [page 326] demonstrates the physiological progression or evolution of the races of mankind. All natural laws operate in perfect harmony, and throughout the gyrations of bodies (in their several cycles) their apparently rival paths continuously intertwine, but with never a jar, until some one or more fly off at a tangent.

The very great weight of evidence gleaned from the works of the most eminent scientists go to prove that we all descended from one parental stock, and the best evidence we have is that the English and native Australians produce fertile half-breeds, and it has also been proven that fertile results may be obtained by the crossing of any of the races, which is very conclusive evidence that all the different varieties of mankind are zoologically of one species.

Tylor says, "We may accept the theory of the unity of mankind as best agreeing with ordinary experience and scientific research. But it is not yet clear by what cause these stocks or races passed into their different types of skull and limbs, of complexion and hair." Some have maintained that the races were the result of climatic influence. While it is true that the native habitat of the dark races is the tropics, and a great change is produced in a few generations after removal from that native influence, yet that cannot be the only cause of producing racial type. We know there is quite an individuality and variability in any species, and by the exercise of sexual selection any peculiar mark or characteristic may be transmitted and intensified. It is very evident that the present basal temperaments made their appearance very early in the existence of man, and that by the sexual selection of those of the bilious temperaments the dark races were formed and intensified under climatic influences. It is a fact in natural history that the dark races in their savage state always choose the darkest mate and look upon them with

pride. And so with the other races. It seems there is an instinct to intensify the type. Another notable fact is that the flat-nose nations bandage the little ones' noses as do the Chinese women the feet of their babes.

Much is to be taken into consideration in the speculation of the formation of the races, and we must take into consideration environment and the law of degeneracy, as well as the theory or science of evolution. Professor Drummond says, "Our environment is that in which we live, move, and have our being. . . . An organism in itself is but a part. Nature is its complement. . . . My environment may modify me, but it has first to keep me."

We all know how susceptible of modification are the minds and habits of individuals; just so the different organisms are susceptible of being modeled. If we do not rise to make our own environment, it is made for us by the law of degeneration. So that this whole life becomes a struggle of the survival of the fittest, and a struggle for the life of others by reproduction. Therefore, to preserve a type of race it must be kept in the same environment under the same climatic influences and free from foreign blood.

No better example can be cited than the Egyptian. The likeness of the statue of Rameses II, dating back three thousand years, is the type of the Egyptian to-day. Zoölogically they have maintained a balance for over three thousand years, but ethnologically they have degenerated to a little higher than barbarians, but with the onward march of civilization they cannot maintain a balance forever, for

"They who cannot or will not climb,  
Be trampled down by them who can and will."

Taking a bird's-eye view, we see the rise and fall of kingdoms and empires, and the extinction of whole races of men; but through all this we see the preservation of the man divine, zoölogically and ethnologically.

As I maintained in the fore part of this discussion, nature travels in cycles in the performance of all her works. The cycles of the divine type extend through, say fifty thousand years, yet it is none the less a cycle. Does it seem egotistic to state that there will never be a higher creation on earth than man?

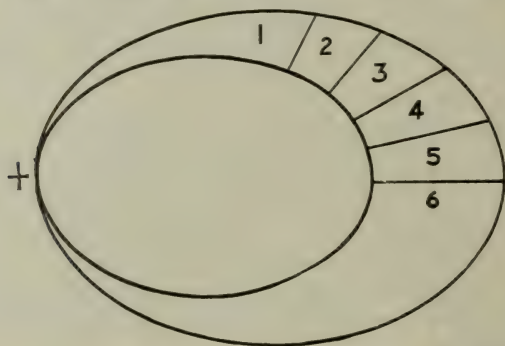
Yet that, we believe, was true before his fall. He ate of the tree of knowledge, he has paid the penalty, and we see him about ready to return to that perfect estate.

To illustrate the point more clearly, I present here a diagram or cycle of the races of mankind.

We start with +, the divine type, for organic evolution here finished her work. She made a man in the image of God, and a free moral agent, but without knowledge. She could go no farther. Through the prehistoric ages we have glimpses of man through our mind's eye before the dawn of language or articulate speech. We see his works in the palæolithic, the



neolithic, the bronze and the iron age. We view the means of civilization at its highest point, viz, rapid transit and migration of every nation and race and tribe. Standing midway in the cycle we can view the future as we do the past and the consequences can be measured with nearly as much accuracy as can the distance to the sun. We are altering all prior conditions by the turning of the tides, as it were, through rapid transit, from



+ The Divine Type. 1. Prehistoric Age. 2. Palæolithic Age. 3. Neolithic Age. 4. Bronze Age. 5. Iron Age. 6. Period of Coalescence and Extinction of Racial Lines.

one type, and to that type we must return. It is true it will take as long to return as it has to reach this point in civilization, for "The sins of the parents shall be visited upon the children to the third and fourth generations." Within the largest cycle are the smaller cycles. Kingdoms must fall, empires must be wiped out, races become extinct, but a grand republic shall stand,—"by the people, of the people, and for the people," and for God.

I will now ask you to go back with me to the origin of man as a babe in the woods under the fostering care of the Creator. And as he looks around the following mental phenomena present,—surprise, admiration, curiosity; but his only language is a cry. The vocal organs are complete, the organs of speech are perfect, but the centers of speech in the brain are as yet rudimentary. The birds are singing their sweet songs about him, and with the dawn of mind he notices he can change his cry into a coo, and as he grows in mind, pride and affection present themselves at the sight of his mate, and in the emotion for the beautiful he bursts forth in a song of love, and all nature joins in the gladsome chorus: "Glory to God in the highest, and on earth peace, good will toward men." The highest aim in creation is finished.—Man in all his simplicity and innocence and glory, as a free moral agent. But with the growth of mind comes temptation, and then sin, deceitfulness, shame, regret. And then come anger, rage, and murder. He has descended from the height of nobility to the very bottom of despair, and is now on a level with the beasts of the field and the fowls of the air, but he has been given dominion over them.

We follow him down through the ages and we find no evidence of articulate speech or language until we reach the third dynasty, in which we find hieroglyphics, three thousand years before Christ, but very evidently man had been using articulate speech for generations.

Nearly all animals are endowed with vocalization, and a sort of language. Hence it is fair to suspect that articulate speech in man was the outgrowth of mental activity and prior vocalization. Winwood Reade says, "The negro in Africa, when excited, often bursts forth in song, another will reply in song, while the company, as if touched by a musical wave, murmur a chorus in perfect unison."

Monkeys express their emotions by different tones, anger and impatience by low, and fear and pain by high tones, and in their native state sing together. We all know very well the language of a dog. The bark of joy, the growl of anger, the yelp or howl of despair when shut up, and the whine or cry of suffering. Again, the lowing of the herd at eventide, the cry of the panther at night, the birds singing and warbling their songs of love in the morning. But it has been given to man, the divinest of animal creation, to express himself in sweet songs of love, to utter his tenderest emotions in articulate phrases of sympathy and affection, and to inscribe his noblest works for the elevation of all those who shall follow him.

We come on down through the ages of accumulated knowledge, and we see Pilate, with tottering steps, trembling hand, and faint heart, bringing forth Divinity to the howling mob, and with an irresolute voice crying out, "Behold the Man!" and all nature resounds and reverberates the echo "Ecce Homo!" "Ecce Homo!" And this is the beginning of another cycle, within the larger path we are traveling, which shall end also where the larger cycle began, and the two shall join in the perfect man, physically, mentally, and spiritually.

We come on down through the ages, and we hear a thousand different tongues spoken, and they too shall become like the races, tribes, countries, kingdoms, empires, and other governments, reduced to one, and that shall be the universal tongue.

Charles Darwin says, in his "Descent of Man," "Obscure as is the problem of the advance of civilization, we can at least see that a nation which produced during a lengthened period the greatest number of highly intellectual, energetic, brave, patriotic, and benevolent men would generally prevail over less favored nations."

What has all this to do with the practice of dental and oral science? I answer, it is the very keynote to the sweet strains of the march of oral science to-day. I have shown you something of the fearful struggle that man has been going through for thousands of years to attain and maintain his highest state of perfection. And we, as scientists, have no right to mutilate or distort the expression of this human face divine by extracting those priceless members and inserting an artificial denture which

is no more in conformity to type and temperament than a pod of beans. Drs. Price, Brophy, and Case have shown us the restoration and alteration of features in the grand work they are doing, giving expression of intelligence and feeling in visible characters which require an artist's training to perform.

The temperaments are becoming so complex that we can no longer adhere to specific rules and tables in our delineations of oral and facial lines. For a long period this complexity will increase with the mixing of races and nations, but,—as with the tongues of men, so with the races of men,—until we finally merge into the specific type.

In oral prosthesis, whether it be the insertion of an obturator, an artificial denture, the correction of irregularities of the teeth, or oral and facial orthopedic surgery, we must have in view constantly the proper mechanism of articulate speech, just as the Creator (our only perfect Law) would have us operate. And then we shall have fulfilled our highest mission in the restoration and preservation of the human face and articulate speech divine.

ADDENDUM.—For students and those who wish more light on the descent and ascent of man, and the origin or formation and growth of language, I append a bibliography. The cycles I have drawn, and the theory they carry with them, are original with me, and if they shall develop into scientific truths I shall owe an everlasting debt of gratitude to those patient and painstaking scientists who have done so much to increase my little storehouse of knowledge.

#### BIBLIOGRAPHY.

- DRUMMOND: The Ascent of Man. Natural Laws.  
 TYLOR: Anthropology.  
 SPENCER: Principles of Biology.  
 DARWIN: The Origin of Species. Descent of Man.  
 HUXLEY: Man's Place in Nature.  
 WRIGHT: Man and the Glacial Period.  
 HAECKEL: Evolution of Man.  
 LE CONTE: Evolution.  
 WHITNEY: Life and Growth of Language.  
 SEEVERS: Philology.

#### AN IDEAL BICUSPID CROWN.

BY RICHARD L. SIMPSON, D.D.S., FINCASTLE, VA.

MUCH has been written in the journals of late about there being no ideal bicuspid crown. Porcelain "cup" crowns, as well as ordinary porcelain, have been advocated by workers in this material because they most nearly approach the ideal, *i.e.* having no display of gold at the buccal or grinding surface and at the same time being strong enough to withstand the stress of mastication.

The bicuspid here described is more easily made than a porcelain one, and fulfills the three requirements demanded of it:

The root is prepared as for an ordinary Richmond crown; the band made, festooned, fitted, and ground off to be under the gum



at the buccal surface, but rather wide at the palatal (Fig. 1). Solder the floor to the band with 22-karat solder, leaving a slight projection of the floor like a brim on a straw hat. Trim the mesial and distal parts of the cap so it will pass the approximate teeth to its position on the root; solder the pin to the cap, and then fill in with 20-karat solder the angle formed by the band and projection of the floor. Replace on the root, and take the bite and impression.

After mounting on articulator, select a suitable *saddleback* plate tooth, making sure that its palato-buccal dimension is long enough; grind to dotted line of Fig. 2, to its proper position; back it with 24-karat gold; place it on cap; invest and fill the V-shaped space with 18-karat solder, letting the solder melt by heating the investment from the bottom.

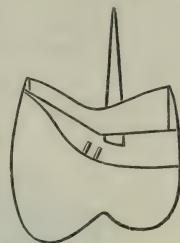
FIG. 1.



FIG. 2.



FIG. 3.



The diagram of the cross section (Fig. 3) is an explanation in itself.

The reasons for reinforcing the band should be only too evident, as the ordinary band never restores as much tooth as has been cut away, and in case the gold should happen to show, its appearance is that of a gold filling. (Who ever saw an ordinary band look like a gold filling?)

The buccal curve of the crown is continuous from the edge of the band to the edge of the porcelain cusp.

The solder at the palatal part of the band does not run off in the final soldering, being prevented by the floor of the cap.

A saddleback tooth almost never breaks in soldering, and its strength when so used is beyond question.

A crown so made is a thing of beauty, and will satisfy the most esthetic among us, to say nothing of the patient.

## A COMBINATION OF PLAIN AND GUM TEETH.

BY H. GREELY, D.D.S., ELLSWORTH, ME.

FOR the last few years the trend in plate work is to use plain teeth in preference to gum teeth, even when the alveolar process is sufficiently absorbed to permit the use of the latter.

The chief reason for this preference is the ease with which single teeth can be ground to the model,—or, I should say, the lack of

grinding needed by plain teeth as compared with block teeth. But when one takes into consideration the festooning and polishing of the rubber around plain teeth, the time and labor thus expended more than offsets the extra work of grinding gum sections.

Another reason is the greater variations possible in the mounting of single plain teeth: but do dentists, as a general rule, avail themselves of these desirable features? Is it not a fact that nine-tenths of those using single teeth set them as even as possible, instead of trying to imitate nature and make the resulting denture look a little less stiff and artificial? Unless we are to avail ourselves of the desirable advantage which single teeth offer in the imitation of natural irregularities, I would use the gum sections in preference every time, for no one can deny that a mineral gum is far superior to any rubber or celluloid substitute now in use, as at their best and when freshly polished they are a poor imitation, but when they lose their luster, which they soon do, they then become rough, slimy and offensive.

Thinking there might be a compromise between the two, I, last spring, took an upper set of gum teeth minus the molar blocks, and ground the teeth all away, just leaving the festoon outline, as it is shown in Fig. 1, then ground these skeleton gums to the model,

FIG. 1.

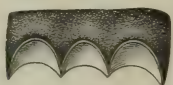
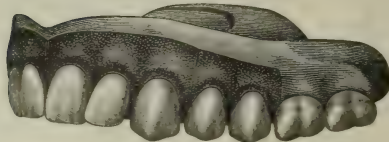


FIG. 2.



FIG. 3.



after which I selected plain teeth as nearly as possible like those destroyed, and ground them as nicely as I could to the indentations in the gums. Then, proceeding in the usual way, I found I had a set of gum teeth in which I could make any variation desired. In this my first trial plate I packed pink rubber quite freely, so that the red or black rubber composing the body of the plate would not squeeze through and show. Then in the mouth an observer could not tell but that they were solid blocks.

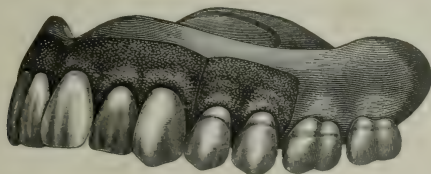
When showing this my first trial plate to Dr. Chilcott, of Bangor, the thought occurred to both of us, Why not use in place of the pink or white rubber some of the numerous mineral bodies so much in use now? So I removed the teeth and gums from the old plate, remounted on a new model as before, then mixed some plaster and invested the central and bicuspid blocks on one side; when hard

enough warmed them slightly, so they would free themselves from the wax. When this was done there was quite a space left to be filled, and the more space the better, if mineral body is to be fused in it.

I filled in the space described with some low-fusing material, invested that side in sand and plaster, then cut the plaster from the face of the blocks, and sent to my friend Dr. Chilcott, who has an electric furnace and who kindly offered to assist me by fusing it. He of course had to add some body to the space left over the teeth, and this when fired gave it an excellent color and natural effect.

After remounting and finishing the plate we were agreeably surprised, for we had an irregular, natural-looking set of *gum* teeth. By this method one can lap one tooth over another, cant in or out, have spaces between the teeth, have flat gums or bulging, and if we desire one tooth shorter than the others, grind it off at the neck instead of the cutting edge. If, as is often the case, fuller gums over the canines are desired, add extra body and fuse it.

FIG. 4



If manufacturers of teeth, already having the gum teeth molds in great variety, could by some means separate the tooth from the gums before baking, and have the gum veneers quite thin, thinner than they are now made; it would be comparatively little more work than at present to make an artistic looking set of teeth at reasonable cost. Rubber plates, which in so many instances are offered at such a ridiculously low price, can by the expenditure of more skill be enhanced in value and appearance so much the more. As regards the strength of this work, I omitted to state that in several cases of broken teeth on gum sets where the gum itself was not fractured I have ground out what was left of the tooth and fitted a plain one in its place, one which I first put in having lasted three years and is still all right.

If the tooth was countersunk at the upper end to allow the rubber, celluloid, or fused mineral to enter, it would strengthen the hold of the tooth to the plate. In the two plates I have made I used the single molars, but now wish I had used the gum blocks as at present made, for the set would look better, and being out of sight in the mouth it would be no advantage to set them uneven.

One can fracture any gum section by long vulcanizing, so I experimented with one set to see if it would break in the festoon where the mineral was fused. I vulcanized it one hour and it came out all right. I then put it back and ran it another hour and found the gums cracked straight across, not following the outline of the



tooth, and on the other side of the plate where no mineral body was used there was no fracture.

Where no fusing material is used I beveled the upper edge down toward the face of the veneer, and the lower edge of necessity had to be beveled up to fit the neck of the tooth in. It was dovetailed in so firmly that I fractured one corner of the gum in removing it from the first plate I made. I am rather fussy and particular in my plate work to have nice joints and well finished sets, but in these two plates I have purposely gone to the other extreme to show what irregularities can be produced.

---

## A HOROSCOPE OF DENTISTRY.

BY DR. STEWART J. SPENCE, HARRIMAN, TENN.

**A**S when a traveler ascends a mountain height the landscape widens to his view at every ascent, so Dentistry, as it climbs from decade to decade sees its scope of usefulness gradually but surely increasing. The question naturally arises, as we stand on the height reached at this the end of its first century of activity, What will its future be? Is it possible with any certainty to cast its horoscope? Will the ideal filling be discovered? Will regulation be reduced to a simple and easy operation? Will the horrors of the dental chair become a thing of the past by some new discoveries in anesthesia? Will plate-work be eventually slain by its old rival and antagonist, operative work? Or will the opposite occur, and such improvements be made in plate-work that it will hurl filling and regulating and scaling and pyorrhea treatment into limbo? Ah, who shall say!

If I were permitted to guess, I should modestly venture an opinion that at least two or three things will come to pass within the early decades of the present century.

And first among these is, *an advance in the direction of better occlusion of the natural teeth*. Of course, this is already being done to some extent by regulation. But often we meet with patients whose years have passed the age at which regulation is advisable, or even feasible, and yet their dentures occlude, or, rather, fail to occlude, in such a way that the main function of teeth, namely, mastication, is hardly performed at all. We carefully scan these teeth for cavities, we scrupulously cleanse them of tartar, we urge the patient to diligently employ the tooth-brush, and then, *perhaps*, we take a cursory glance at the occlusion, and observe that many of the teeth meet only on cusps or edges, and some meet not at all; but we heave half a sigh and let it go.

Now, if dentistry means anything, it means the giving, or saving, to mankind the masticatory surfaces. The time will probably soon come when a tooth that does not occlude properly with its antagonist will be made to do so, by fair means, if possible; if not, by foul,—that is, by regulation, if possible; if not, by crowning or contouring. Let us suppose a case where the canine and the third

molar occlude properly, but all the intermediate teeth either occlude badly or not at all. Now if it is justifiable to put a bridge from canine to third molar, in cases where no intermediate teeth exist there at all, why is it not justifiable to put a bridge in the same position if the occlusion is so defective that it does not answer the purpose of nature? I do not mean that these irregular intermediate teeth will be extracted, but contoured, crowned, or bridged.

Perhaps in fifty years the people who are now allowed by our undeveloped professional sense to go in peace with such almost worthless dentures, will be fitted with grinding surfaces shaped for mastication as correct as the ideal forms presented in Dr. Bonwill's diagrams,—forms not found now even in one in twenty of the most perfect natural dentures, but then to be found in every mouth as above indicated.

A second advance in dentistry which I will venture to forecast is, *a simplified and better style of bridge-work*. At present we mercilessly grind and mutilate the living organs for the sake in inserting a few lifeless ones, whose "lifetime" as a bridge is apt to be itself abridged in a few years by the failure of the mutilated supports, robbed as they (often) are of their vitality by the operation. For some time past I have been brooding on an idea for making a tooth serve as an abutment without mutilating it, or doing so but little. I have not yet had the courage to experiment on a patient with this new method of mine, but I throw it out now as a sort of hypothesis which others may be induced to take up. It is this:

For instance, given a sound third molar and bicuspid, to support a bridge upon them by closely fitting bands resting only on the inclined surfaces of the crowns which slope outward from the occlusal surface to the widest portion of the tooth, which is usually found about two-thirds of the distance from the cusps to the gums. Take an impression of the tooth and obtain a metal die, swage thin platinum plate to exactly fit the tooth, with lugs reaching over at two points on to the occlusal surface; bend a ring of clasp metal around the swaged platinum, and stiffen the whole with solder, thus making a very strong band; affix the dummies, and cement on the whole. If necessary, drill a hole through the band and into the tooth, tap it, and turn in a screw. Would not this be better, as well as simpler, than extensive grinding, with probable death of the pulp, and possible misfit of the border of the crown, resulting in gingivitis?

A third guess at taking the horoscope: *The offensively dull pink vulcanite gums for artificial dentures must go*. At least, they so deserve. Celluloid has failed to prove itself a good substitute for vulcanite. The gum block teeth are exquisite as far as the gum color is concerned, but it is almost impossible to articulate them properly with an occluding natural denture; and their spaces and generally artificial and unnatural appearance are against them. Besides, the joints are often conspicuous, and can only with certainty be rendered perfect by skillful grinding and the adoption of my "Radical Method," which requires time and some skill. That which dentistry needs is a quick and cheap way of supplying con-

tinuous porcelain gums with vulcanite dentures, and there is probably a small fortune awaiting the manufacturer who will take the dentist's wax trial plate, with its plain teeth set up and its wax gums carved to shape, and by returning mail, or at most next day, send him back his teeth set in beautiful porcelain gums reaching as far back as the second bicuspid, and all for a dollar or two! If a set of teeth, including platinum pins, can be made and sold at a profit for one or two dollars, why could not these gums be so, if the manufacturer only received enough orders for them? And surely the orders would flow in.

I fondly strain my eyes in looking into the dim future of dentistry to see some concerted action on the part of the profession for *scientific research*. At least we might have a fund for the collection of statistics. At present nearly all that is discovered for us is done by individual effort. We go along blunderingly, like an army that is not sure it knows the ground it stands on, nor whither the road it is traveling leads, yet is so unscientific as to send out no scouts.

For instance, how much does the profession know of the laws which govern that common article which we use daily, plaster-of-Paris? Verily, but little; as my own researches during the past year into its intricacies have abundantly demonstrated to me. We leave such pioneers of research as Miller and Williams and Black and Bonwill to go forth alone, unaided and unsupported; whereas such men ought to be entreated and well salaried to devote all their time and energies to research.

With the rapid and vast increase of the dental colleges and the consequent surcharging of the dental ranks which has come upon us during the last few decades, it behooves the profession to reach out after new and wider fields of work, and to simplify and thus popularize those in vogue, and wherever possible, by raising the quality of work, to increase its remuneration. In this way we may be saved from the discouraging circumstances with which the present rapid increase of competition threatens the most of us.

---

## THE NEXT STEP IN THE PREVENTION OF CARIES.

BY CHARLES H. BARNES, D.D.S., SYRACUSE, N. Y.

(Read before the Eighth District Dental Society, Buffalo, N. Y., December 31, 1901.)

LOOKING back over the advancement that dental science has made in the last quarter of a century, we see it has been along two lines. The first is mechanical improvement in instruments and in the skill to use them; the second may be summed up in the word "prophylaxis." The results of the steps taken along these two lines have done wonders in the prevention of caries; but another step must be taken before we can say we have conquered in the fight.

There seems to be a limit to the mechanical improvement of any particular machine that is reached in about twenty-five years. Any further improvement is usually of minor importance, and skill in



the use of the machine determines the results. This is notably true, for instance, of the bicycle. I believe the improvement in dental instruments, electrical devices, etc., has nearly reached this limit; therefore the next step in the advancement of dental science must be of a preventive rather than of a reparative nature.

Histologists and bacteriologists have taught us much about the cause and process of dental caries, and we have attempted to stay its ravages by the use of antiseptics and antacids. I trust you will pardon me if I seem to dwell on the A B C of this matter, but I think a semi-occasional brushing up on our primer and first reader will do us no harm on a subject that we are not using and talking about every day.

Asepsis is a condition of cleanliness and freedom from bacterial infection. The words "germicide" and "antiseptic" are often used synonymously, but there is a difference in their exact meaning. A germicide is much more powerful than an antiseptic, for whereas an antiseptic maintains an aseptic condition and prevents the development of many species of bacteria, a germicide kills those already there, even the spores. For instance, a surgeon uses a germicide, as bichlorid of mercury, to produce asepsis, and then an antiseptic, as iodoform, to maintain it. The development of bacteria would not be prevented by the use of the antiseptic alone. We produce asepsis with a germicide and insure it with an antiseptic. All antiseptics are mild germicides.

Many diseases of bacterial origin will not be contracted by a person in perfect health. Even the germs of typhoid fever and tuberculosis they may swallow almost with impunity, but let the vital forces fall below par and one becomes an easy victim. Some diseases are contracted readily and no degree of health will prevent inoculation, though the intensity of the attack may be modified. Gonorrhea, fortunately, confines itself to the genital organs, and few but sinners suffer. Syphilis, on the other hand, seems to be the visitation of the sins of the father unto the third and fourth generation. The innocent and guilty suffer alike, and as many contract it innocently as sinfully. It is the one disease above all others that we must avoid communicating by our hands or instruments from one patient to another. You can produce a most perfect inoculation with a pyorrhea scaler, but it is not likely that the virus will be that ordinarily used for vaccination purposes. An ordinary alveolar abscess may be developed in a patient with an instrument infected from a putrescent pulp in another case.

It was not a great many years ago that the opening of a dead tooth was expected to be followed by inflammation and abscess. How many of you expect such a sequence of the operation to-day? Not one. You open the tooth with aseptic instruments, use germicides to procure asepsis and then antiseptics to maintain it. First we need asepsis in our instruments and then at the seat of the operation. A perfectly clean instrument,—by that I mean one without a trace of organic matter on it,—does not need to be sterilized; it is already sterile, there is no food or lodging-place for a bacterium on it. Unfortunately such a condition is almost impossible to

maintain, but the organic matter and bacteria that will get on it in an ordinary dental cabinet are usually harmless, or will be rendered so by the saliva which has mild germicidal powers on bacteria not ordinarily found in the mouth. The absolute removal of all organic matter from an instrument is difficult, and sterilization by heat or otherwise becomes the only means of placing an instrument in a condition to use in another operation. A surgeon not only sterilizes his instruments after an operation, but also before use again, and handles them with hands that are absolutely clean. For the ordinary dental instruments this is unnecessary if unclean instruments have never been put in the cabinet.

Some time ago in a paper I read before the Fifth District Dental Society, I spoke of the susceptibility and immunity of teeth to caries. After showing the process to be due to the production of an acid at the point of lesion by one or more species of bacteria destroying the calcium salts of the tooth, I said:

Caries may proceed in enamel and even in dentin and then cease from a lack of this production of an acid. The cause of its cessation, the non-production of acid by the bacteria, is unproved as yet. The vital resistance of the person may affect the rapidity of its penetration, and I am convinced, in spite of laboratory experiments by some of the past masters of research, that the organization of the dentin does in some way determine the rapidity of the progress of caries. That there is a greater and more important reason I am as firmly convinced. I have shown you that the first and last step in caries is the result of an acid, that we always find a layer of bacteria adhering tenaciously to the approximal surfaces of the teeth and in the sulci; that we always find them in these places whether decay is taking place or not, also when it has commenced and ceased; that we only find caries where there is opportunity for the lodgment of bacteria. The logical conclusion is that bacteria elaborate the acid which destroys the lime salts. And why do we have the production of acid at some times and not at others? The production of an acid by the bacteria, Dr. Miller has shown, depends entirely on the food they have. Then we must look in the secretions of the oral cavity for the material, organic or chemical, which exerts an inhibitive power, either on the bacteria themselves or on their food, preventing or permitting this production of acid. An alkaline solution of bouillon with bacteria in it will remain alkaline indefinitely. Add one-half of one per cent. of sugar and in a short time there is an acid reaction. Some other foods will give the same result. The chemical composition of the saliva, exerting a chemical influence on the food of the bacteria or on the bacteria in their consumption of it, determines whether their excreta shall be a tooth-destroying acid and the bacteria be classed as pathological, or whether their waste products shall have no effect on the tooth and the bacteria be harmless zymocytes. I see no reason why we cannot state that the susceptibility or immunity of a person to caries is in the secretion of the salivary glands, the same as the susceptibility or immunity to typhoid fever lies in the digestive tract, and in this way is the vital resistance of a person to the disease manifested.

Therefore, gentlemen, if the composition of the saliva is the controlling force it seems to be, we may live to see the day when dental caries will be treated systemically. That is, such medicinal treatment will be administered as shall influence the secretion of normal saliva by the glands, and analyses of the oral fluid will be made to determine the necessary medication, the same as urinary examinations are made of the secretion of the glands, the kidneys, to determine whether they are excreting normal urine or not. The slow or rapid progress of caries, or immunity to the disease, is affected by the physical health of the patient only as that determines the composition of the oral secretions. It seems unnecessary to me to look for a vital resistance in the enamel of a tooth when we know that the immunity of a person to certain diseases depends on the general tone acting through the



secretions of the glands or through the activity of the blood corpuscles. When these become perverted from any cause the person is liable to infection and to become the victim of disease.

Gentlemen, this is only a theory, but it seems a plausible one. There must be some reason for the apparent variation in caries, and until I find a better one I shall hold to this.

You may ask, In the face of this, of what earthly use are anti-septics? They are useful in that they provide the inhibitive power that is lacking in the saliva. Better yet would it be if we could discover the remedy that would cause the salivary glands to perform their plain duty and provide normal saliva which would prevent the formation of acid by the bacteria.

And now to come to the real subject of this paper, the "prevention of caries." A question we have all met, propounded by more than one parent, runs something like this: "Doctor, what can I do to improve my child's teeth? He is eight or nine years old, cleans his teeth regularly two or three times a day, perhaps uses a mouth-wash, also an antacid, eats good wholesome food and little or no sweets; but look at his teeth!" You look. Like the charge of the Light Brigade, cavities in front of us, cavities to right of us, cavities to left of us. Cement fillings washing away, caries proceeding around the margins of gutta-percha and amalgam fillings alike, the teeth sensitive, and the child nervous. What can we answer? Perhaps the child is younger,—none of the permanent teeth erupted yet, and the parents consult you for not an ounce of prevention, but a pound of it if necessary.

Shall we confess that we are doctors of dental surgery and not doctors of dental medicine? That we can repair the carious teeth if the patient will suffer some pain quietly, but we cannot prevent the steady inroads of the disease? Or perhaps it is at an earlier period yet in the life of the child when you are consulted, it may be by an expectant mother before the birth of the patient whose teeth you will care for. I cannot express my thoughts better than by quoting from a paper read by Dr. J. H. P. Benson, of Washington, D. C.:

The progress made in dentistry in recent years and the high degree of perfection reached in all pertaining to operative procedure has been most gratifying to all interested in the subject. But, with all the enlightenment we have, it is nevertheless true that there is a continued and steady deterioration in the quality of the teeth presented in a large percentage of cases which daily come under our observation. Many of the pathological conditions requiring our professional attention are traceable to an inherent weakness in the teeth, the original defects in construction, together with their small degree of recuperative power, leaving them an easy prey to all forms of dental disease. We undoubtedly save more teeth at the present time than they did a few years past, but that the preventive measures we have at our command are woefully inadequate is self-evident.

He also says:

Should the mother, however, be healthy and strong, and anatomically normal in relation to childbearing, we have every reason to assume that her offspring also will be healthy and well developed. This being so, we necessarily expect to find the dental organs strong and well constructed. Hereditary influences are potent factors for good or evil in the future of the offspring morally and physically.



Dr. W. A. Mills, in discussing the paper, said: "The first cause of much of the dental trouble may be laid at the door of malnutrition of the mother during gestation. Mothers do not get the food needed or their systems do not get the benefit they should from it." He thinks that the use of white bread in which the phosphates are all milled out is responsible for the poor constitutions with which many children begin life.

At the risk of having you think I have taken the entire contents of this paper from the reports of dental meetings published in the DENTAL COSMOS, I am going to quote from a paper read by Dr. C. T. Stockwell before the Massachusetts Dental Society a year or so ago:

That the manipulative side of dentistry has taken a long stride in the last few years is apparent to all. It has reached a degree of perfection never heretofore realized. This is well, and the profession is to be most heartily congratulated. Please understand me correctly in what I am about to say. I am in most hearty sympathy with the advancement the profession has made and is making along the lines of manipulative and mechanical ability. Dentistry could never have become what it is to-day without this advance on its mechanical side. It is to a large extent applied science. *Unapplied* science does not help the world on to any great extent. I have no word to offer in the way of discouragement in reference to any effort to still further perfect ourselves in all the methods and processes of operative procedure. But I am impressed with a feeling that as a profession we are nearing a point where it will be seen to be wise to consider somewhat carefully the real situation. There is danger, is there not, that just now we are depending too exclusively on manipulative skill? There is danger that we shall rest content, unwisely content, on the resources of the deft hand alone. Is dentistry to go no higher in its reach and scope than that phase of it embraced in the term "manipulative ability?" If so, then let us name our calling an *art*, and not a profession.

What is the real situation? It is this: human teeth continue to decay,—increasingly so, in the opinion of many good observers. This hard, bald fact stares us in the face, and will not down at the behest of any degree of perfection of manipulative art. Is there not danger that we may become so absorbed with the varied and inviting manipulative methods as to forget this fact? Now to take another view of the situation. I am much mistaken if the hour has not come when we are challenged by the public we try to serve to take a higher stand. Intelligent patients are beginning to demand of us something more than the deft hand and the ordinary, conventional methods of prophylaxis. It is a significant fact that women in the early stages of gestation are beginning to come to us for advice, not for themselves but in the interest of the expected stranger, the child.

The question is often asked, Can anything more now be done to aid in an effectual way the development of good dental organs? And here, let me repeat, is a high challenge to and a serious demand on the dental profession. Deteriorating teeth stare us in the face on all sides, and such teeth we shall some day find out constitute a poor foundation upon which to erect a mere mechanical structure that shall prove worthy of a professional reputation. That is to say, any real reputation as a profession must be based upon our success in preventing and combating disease, rather than upon skillful mechanical reparative processes.

\* \* \* \* \*

With a number of other men he believes that preventive means must be directed to the period of prenatal life, through the mother, in order to build a good foundation for the physical constitution of the child. To my mind it is the next period of the child's life,

the nursing period, at which most can be done for the future health of the child. The percentage of women who nurse their children is woefully small. Is there a substitute for mother's milk that contains the elements necessary for the perfect growth of the child in a form capable of easy and perfect assimilation? There are two reasons for the use of artificial foods. One, the dislike of many women to give up part of their life, to be tied down to the raising of the child. The other reason is the physical health of the mother, which in our civilization is usually below normal, and then the milk secreted for the sustenance of the child will not be normal either, but lacking in some constituents necessary for tissue-building. How many women, or men either, are perfectly nourished? How many assimilate the foods necessary for each and every tissue of the body? A person may be fed any quantity of most nourishing food, and if it is not assimilated he might as well be on a diet of milk, sawdust, and sand. Malnutrition is responsible for most of the ills of the human race to-day. Fresh air and exercise will do more to correct it than all the drug-stores in the country. But so long as it is easier and takes less time for men to go to a physician and get a prescription for some powders or pills, and feel better temporarily, they will do it rather than devote a certain amount of time every day to fresh air and exercise.

Asepsis and the use of antiseptics, then, will do much to retard the progress of caries, but as it is absolutely impossible to keep the mouth in an aseptic condition by any process of asepticism, we must look to the vital force in the constitution of the patient to prevent caries. Fresh air, diet, and exercise are the three remedies on which we must depend for the successful treatment of caries. To convince a patient that their continued use regularly throughout their lifetime will be necessary may be an easy matter. To have them carry out the prescription is something entirely different. They may for a while follow closely on the line laid down, but the percentage that will devote the necessary time to keeping the body in perfect health is very small. And besides, many have poor constitutions to begin with, inheriting weaknesses from either or both parents.

I believe that good health will retard the progress of caries. Whether it acts through both the saliva and the vital force of the tooth, or through the inhibitive power of the saliva alone, I can express no opinion.

In closing, I want to emphasize the fact that prophylaxis and the regular use of antiseptics will do much locally toward remedying, but not preventing, the condition which permits the progress of the disease. To prevent it we must look farther, and if the next step of dental science is in the direction outlined by Drs. Stockwell and Benson, and the twentieth century witnesses as great an advance in the prevention of caries as the nineteenth has in repairing its ravages, civilization can honestly call us blessed among men.

## TO ADJUST THE PARTS OF A BROKEN VULCANITE DENTURE AND GET A MODEL OF THE SAME.

BY DR. JOSEPH H. NOBLE, PHILADELPHIA.

PASS a cake of modeling composition through the flame of a Bunsen burner until one surface is soft, the other surface remaining rigid. Lay the cake on a flat surface soft side up, and press the occlusal surface of the artificial teeth into it, getting the pieces of the denture in approximately their proper relations. Then, using both hands, correctly adjust the several pieces. They will move readily in the soft composition and will stay where placed. Harden with cold water to prevent the accidental moving of the parts.

Now pour plaster into the lower part of a flask, and, after placing some also on the palatal portion of the denture, place the denture in the flask. When the plaster has hardened remove the modeling composition, remove the pieces of the denture, and proceed as usual.

The cake of modeling composition should not be much larger than the denture, at most not so large as the inside diameter of the flask. In the case of a broken lower it is sometimes advisable to run the cast first, not placing it in the flask until the compound has been removed.

The same compound can of course be re-used. Soften it in hot water and roll to the desired thinness on a piece of glass, with a roller such as is used by the amateur photographer for mounting photographs.

Excellent sheets of modeling compound for base plates may be made in this way.

---

## CORRESPONDENCE.

---

### "A CHARGE OF PLAGIARISM."

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—Mr. Booth Pearsall, of Dublin, has allowed his zeal, in defence of his friend Mr. J. H. Gartrell, to outrun his knowledge of his own book on "Mechanical Practice in Dentistry." If he will turn to pages 168 and 169 of the work in question he will find that Mr. C. D. Grundy, of Batley, Yorkshire, was the first dentist in this country to use a "rubber cushion" or "water bag" or "hydraulic pad" for dental purposes, and he may like to know that Mr. Grundy's patent is dated June, 1895, or three years before the date of the U. S. patent of his friend Mr. Gartrell.

Neither Mr. J. H. Badcock nor C. Ash & Sons ever claimed to have *invented* the "water-bag"; in introducing it we distinctly said that we had substituted a water-bag for the rubber block *at the suggestion* of Mr. J. H. Badcock. We were perfectly well aware at the time that the water-bag, as a water-bag *per se*, could not be patented either by Mr. Grundy or Mr. Gartrell.



We do not quite see why Mr. Booth Pearsall has thought fit to intervene between us and Dr. Broomell on a matter which is not in dispute between us and Dr. Broomell, and which in itself is too insignificant to call for serious notice.

If Mr. Pearsall had carefully read Dr. Broomell's letter and our reply before he wrote to you, he would have seen that such a letter as he has written had nothing whatever to do with the point at issue between us and Dr. Broomell.

Yours faithfully,

LONDON, February 11, 1902.

CLAUDIUS ASH & SONS.

## WHY THIS ATTACK?

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—It was with a feeling of mingled regret and indignation that I read the attack made by the *International Dental Journal* upon the action of the Chicago Dental Society in extending to the dental surgeon, U. S. army, stationed at Fort Sheridan, Illinois, the privileges of membership. The editor of the *International* is quite enthusiastic in his denunciation of the action of the Chicago Society, more especially because these privileges were extended unaccompanied by an "I O U" coupon. Now, in this particular case the editor of the *International* speaks in ignorance, for the writer holds a receipt for his initiation fee, at least.

The *International* further says that a protest should be raised against making these young men "special pets of the profession," and against the effort made to infuse into the dental surgeons of the army that they are in a class one degree better than the young graduate still struggling for an income.

I have seen no attempt on the part of any society or any individual to make the army dental surgeon a "special pet" of the profession. Washington, Chicago, and Detroit,—it is of these three cities I speak. As to the dental surgeon of the army being in "a class one degree better than the young graduate," etc., I am proud to be able to state that our corps numbers some who are indeed in a class "one" degree above the young graduate,—but I may add that they were in that class prior to entering the army.

If indeed the one who speaks through one of our leading journals will state a reason,—other than the one seen upon the face of the article,—why he has chosen to write an article that might mislead the ignorant, he would do the profession, the journal through which he writes, and himself, a justice.

I wish to take this opportunity to append hereto an expression of my most sincere appreciation of the magnificent manner in which I was received and entertained by the members of our profession in Chicago. I feel the benefits even worth the attack that the extension of these courtesies to the dental surgeon at Fort Sheridan have called forth. Yours respectfully and fraternally,

WM. C. FISHER,

Dental Surgeon, U. S. Army.

FT. WAYNE, MICH., March 17, 1902.

## PROCEEDINGS OF SOCIETIES.

## NEW YORK ODONTOLOGICAL SOCIETY.

A REGULAR meeting of the New York Odontological Society was held on Tuesday evening, October 15, 1901, at the New York Academy of Medicine, No. 17 West Forty-third street, New York city. The president, Dr. W. W. Walker, occupied the chair.

## INCIDENTS OF OFFICE PRACTICE.

Dr. S. G. PERRY. I will relate a case which, though hardly worthy of mention, may have one point of interest. Last spring a lad of about eight came to me with an upper central incisor broken in such a manner that fully one-third of the crown was gone. There was a very large exposure of the pulp, which protruded and was very sensitive. I applied vapocain and as soon as sufficiently benumbed I snipped off the protruding portion, and, as I had not time to go further, applied a very small portion of the arsenical paste. When the boy returned a day or two later, I found the pulp destroyed near the orifice, but still alive a little way up the pulp-chamber. My recollection is that I again applied a very small quantity of the paste. He came back in a few days with the pulp still in about the same condition. Not having time to take the case promptly in hand, a carbolated pledget of cotton was placed in the opening, and he was told to come back in a few days. Having no pain he did not come back for several weeks, at which time the pulp was still in about the same condition. It was sensitive and bled at the slightest touch, but was, and had been, comfortable when undisturbed. Again not having time at the moment to apply the vapocain and extirpate it, a pledget of carbolized cotton was placed in the opening of the pulp-chamber, and he was told to come back in a few days. He did not appear again until a day or two before I had planned to leave for my summer vacation. As there was then no time to take the tooth in hand and complete the operation of extirpating the pulp, and filling the pulp-chamber, and as he was also going to the country, another pledget of cotton was applied, and as there had been no pain since the first treatment, his mother was assured that the tooth would be comfortable while he was on his vacation. He was told to report on his return in the autumn. About seven weeks later he appeared with the pulp in about the same condition,—fully alive, and ready to bleed at the slightest touch. It had been comfortable during the summer.

Finding it in such good condition I decided to let it alone. There were several reasons for this. In the first place, at the beginning I saw at a glance that the exposure was so large, and the pulp was so inflamed, and protruded so much, that I could not cap it—and save it—alive. I knew that a crown was inevitable. Since the tooth was doomed, then, it did not matter if it should be left unfilled and unprotected for even a considerable time. At his age there was no pride of appearance, so that to crown it at once was not imperative. Up to this time, as a matter of convenience, I had allowed

it to drift, knowing that no harm could come to the tooth. Now, the real reason for letting it alone was the hope that the development of the tooth would continue, and the apical foramen become more nearly closed, when there would be, therefore, a better chance of saving the root for life.

Now, the question I ask you is, Will the development of the end of the root continue, if the pulp remains alive, as it now is, in the greater part of the pulp-chamber? To me it presents a new question. I believe it will, hence my decision to leave it alone. I am not willing to cap it, for that would imply sealing it up tight, which might result in the death of the pulp, with the chance of disturbance of the tissue about the end of the root. By leaving it open, if the pulp dies there will, I think, be no disturbance at the end of the root, and this I consider of the greatest importance. I directed him to come back once a month for examination. (Since this report was made I have seen him again, and the pulp is in exactly the same condition.)

Dr. ROBT. GOOD, of Chicago. Could not the pulp be protected in some way?

Dr. PERRY. That was the old idea of Dr. Atkinson,—to save and protect the pulp; but it is so largely exposed, that I should be afraid it would not live if closed up. It has been said many times, as we all know, that the barbarians and savages have little trouble from their teeth; they never have any fillings, and pulps left open seldom cause trouble. It was upon that idea that I left it open.

Dr. M. L. RHEIN. I agree thoroughly with Dr. Perry's view of the case as he has presented it. It is very difficult to determine whether the normal action of the pulp has ceased or not. I do not believe an oral examination of the teeth in the condition represented by Dr. Perry would settle that question, consequently I can see nothing but agreement in the course pursued by Dr. Perry. If there is any possibility of diminishing the size of the foraminal opening, we ought to make the attempt. No harm can come from it; on the other hand, there is a possibility that it may be detrimental not to cover it. In my practice I should do as Dr. Good has suggested,—cover it; and if it would not stand a covering, I should fear some pathological action, such as we find in exposed pulps,—that is, a condition of fungous growth,—had taken place, which is a condition we frequently meet with. Microscopic study has not exactly told us what conditions do result, but from clinical experience we all feel a reasonable amount of assurance that a tooth with an enlarged pulp is not exactly desirable.

Dr. A. T. STARR. I think in a case of that kind, a better way would be to protect the pulp in some manner, covering it with some non-irritant capping, so as not to make any pressure. I think better results would be obtained under that method of procedure than by leaving the pulp entirely free and exposed to the fluids of the mouth and pressure of mastication or contact with foreign bodies. If there is no inflammation and if the pulp is normal and healthy in the root portion, I believe the chances for the closure of the apical fora-



men are quite good. I think it would be better to cover it with some non-irritant dressing than to leave it open. If there were difficulty in getting the capping on, I would cover it with some sort of tip to protect it from the fluids of the mouth and from irritation by foreign bodies.

Dr. GOOD. What capping would you prefer there?

Dr. STARR. Usually I prefer to use the oxyphosphate of zinc, diluting the fluid with oil of cloves, or with water, or any mild antiseptic fluid to reduce the irritating effect of the phosphoric acid solution. Distilled water, or plain water with an equal quantity of the phosphoric acid solution will, when mixed with the cement powder to a creamy consistence, give excellent results if applied directly to the pulp in such a way as to cause no pressure on that organ.

Dr. L. C. LEROY. In our daily practice, we often meet with exposed pulps that we do not think advisable to kill, especially in cases of pregnant women. My practice has been to cap such pulps with one of the formalin cements. Although I am on record, I believe, as stating that I did not believe in capping pulps at any time, and did not believe that pulps could be saved by capping with cements, I take pleasure at this moment in retracting that statement. I have capped pulps with formalin cements, and have found them subsequently to be alive, and I see no reason why the pulp Dr. Perry described could not be kept alive under like treatment. This procedure will do at least what is claimed for formalin,—mummify.

Dr. PERRY. It practically takes care of itself. I had no serious thought of keeping it alive for any great number of years, because the exposure was so large, and having had the application of arsenic made to it twice,—only a very slight application of it, of course, because I would not make a large application to such a case,—only enough to deaden the outer surface at first. As I said before, I did not consider capping it permanently when it first came to me, because it was in such a condition that it did not seem possible to keep it alive.

I have a little case here, which is hardly worth showing, and yet it may be of momentary interest. It is a question of a lower incisor which is considerably within the arch. As you will see, there is not space enough between the adjoining teeth to allow it to be moved forward to its place. To push it forward by any means would be to push its two neighbors forward also. The object is to push the adjoining teeth sideways to make room for it. The case is that of a patient out of town. It is not easy to see her very often, and the thought was to devise some means by which the arch could be increased in size a little, to get the tooth in place, leaving it in such a way that she could do most of the work herself. I had a little platinum cap made and fitted to the tooth within the arch, and then baked on the outside of it a sort of artificial tooth which stands in line with the other teeth; and my intention is to cement the cap on the tooth as you see it on the cast, and place wedges between the artificial tooth and its neighbors, allowing the patient to change the wedges herself. I expect to see her about once a week. In that

way I think I can get enough room to force the tooth forward, then other means will have to be devised. The patient is about twelve or thirteen years of age.

I was going to say, For Heaven's sake, let us do all these things as simply as possible, with as few appliances as may be! In this case the force will be brought directly opposite the adjoining teeth, and very thin pieces of rubber or tape can be used and the force must move the teeth sideways. What could be more easily managed by a patient out of town, than some such device as that? It is, however, theoretical, and has not been tried yet. The porcelain was used only that the child in school should not be a glittering show, as would be the case with gold or any other metal.

Dr. F. T. VAN WOERT. Your president called me up on the telephone the other day, and insisted on my coming to-night and speaking of the X rays. I had supposed that the value of their practical application in dentistry was well appreciated, but I find that it is generally not so. While still in its infancy, the use of the X rays is a perfectly practical operation for the dentist of to-day. It is very common in my office, as we have a complete outfit for the work. Experience with them will demonstrate in some cases difficulties almost or quite impossible to overcome, but in the large majority of instances great satisfaction may be obtained. Dr. Rhein has had some experience with our work in this line, and Dr. Jarvie also. I suggested to Dr. Perry that, rather than go into any lengthy discussion of the subject to-night, I would give a practical demonstration at some future date to show you what could and what could not be done, and simply refer you to-night to the gentlemen who have had some of this work done. I will, however, cite one or two cases.

Dr. Rhein, before departing for Europe, referred a gentleman to me with an injury on the left upper jaw, where he had removed a portion, or I think all, of a non-erupted tooth.

Dr. RHEIN. There was no root there. It was the crown of a molar with the root entirely missing. The man was sixty-four years of age, and this has been bothering him for forty years, causing a very considerable abscess,—chronic suppurating abscess. He came under my hands, and I removed what was left of the tooth. It was covered with calculus that made the bulk of it about two inches in diameter,—quite a large body, with barely the crown, and no evidence of any root. Of course, the object of sending him over for an X-ray picture was to determine if there was any root left in the jaw.

Dr. VAN WOERT. Have you seen the negative?

Dr. RHEIN. Yes.

Dr. VAN WOERT. There was no evidence of the root there.

Dr. RHEIN. I am convinced there was never any root there.

Dr. VAN WOERT. The negative made for Dr. Rhein showed clearly the large fistulous tracts. The differentiation between the tissue of the teeth and that of the bone is very marked and distinct, but, to follow a tract or sinus in a negative, one must be familiar with reading negatives.

To show how little time is required for this work: A little boy presented to-day with a missing central and lateral. Only five minutes was necessary to demonstrate their position in the jaw.

Dr. Jarvie sent a case to me of which my partner took care. The negative was made with half a minute's exposure, and the result is very plainly to be seen. Dr. Jarvie, I think, has the negative with him.

I began this work in a dark room for exposures, and met many complications, making it very hard to get good results, but that has all become a thing of the past. We now take an ordinary kodak film, double it, cut it the shape we want, wrap a piece of black paper around it, cover this with thin rubber to exclude moisture, and make the exposure without trying a tube for the intensity of the rays or darkening the room. It is a matter of only a minute or two to get a satisfactory result.

Dr. RHEIN. I would like to add a word to the interesting remarks of Dr. Van Woert, since he mentioned the case I brought him. It was an extremely interesting case for an X-ray picture, for this reason: The removal of this crown of a superior molar which had never erupted was followed by a profuse flow of pus, showing that there was considerable necrosed tissue still in the maxilla. This had kept up for about ten days, when I sent the gentleman to Dr. Van Woert. It was some time in July. The result at that time demonstrated clearly to me (the X-ray picture I saw only when I returned to the city a few days ago) that it was due to necrosed portions of the maxilla; this is not strange, considering that this irritant had been there so many years. The negative shows beyond question that there was no root left in that jaw, and that the entire flow of pus, which is still very extensive, is due entirely to the presence of necrosed bone tissue.

I might add I had an appointment with that gentleman for this morning, after I saw the negative, to remove the portions of necrosed bone, which I could easily feel with a probe, and which were readily removable. During the summer, pus has been coming from there very freely, the patient attending to the cleansing and packing himself. This morning he sent me a note that on the advice of his physician he had decided to have no further interference with it, but dress it himself with antiseptic gauze as he had been doing in the summer. It was upon the advice of other physicians that he let the matter go all these years. He informed me he had had it lanced by different doctors during the last forty years about a dozen times. They invariably advised him to do nothing in the matter. It was only on account of the absence of his physician from town during the summer that he dropped into my hands, and I removed this molar crown with ease. It is illustrative of the fear and dread that many physicians have of surgical interference around the maxillæ. It is undoubtedly deleterious to this man to keep up such a septic condition of his mouth. There is a vast quantity of pus coming into his mouth, and yet a man who considers himself quite a surgeon advised him not to have these portions of necrosed maxilla taken away (although they are very loose, and a simple pair



of pliers would probably remove them), but to let nature take care of it.

Dr. WM. JARVIE. One serious objection in bringing this subject before you, is that if its value were fully known to the profession, Dr. Van Woert would not have time to do anything but take X-ray pictures; there are cases continually coming up in our practice where it is very desirable for us to know the conditions beneath the surface. In regulating cases it may be well to know whether the roots of the teeth are straight or curved, and where there is non-eruption of a tooth, to learn whether the missing tooth is in the jaw. I cite two cases occurring recently in my own practice,—one of a little girl about eleven years of age, where one of the superior centrals had never erupted. An X-ray picture showed that the tooth was in the jaw, but quite high. I made an incision, located the tooth, and by burring away the bone surrounding it the tooth came down perhaps half the distance that was required, and there it seemed to stick. I was anxious to know whether it was wedged in between the root of the lateral incisor and the central, and so held in the position it was in, or whether it required some other means to bring it down; so I sent the little girl to Dr. Van Woert, and another X-ray picture was taken which proved conclusively that the tooth was not wedged in between the other two. I kept up a little irritation, and the tooth has come down gradually, and is almost in place now.

The case Dr. Van Woert referred to as having occurred a week ago was that of a girl twelve years of age. The crown of the upper right lateral, instead of being well formed was quite peg-shaped. The crown of the left lateral was fully developed and of good contour. I was very anxious to know, being about to regulate her teeth, whether this misshapen tooth was a supernumerary and the normal tooth was located in the jaw somewhere, or whether it was the only lateral to be erupted; so there certainly was an advantage in having an X-ray picture. The little girl went to Dr. Van Woert, and he sent me a negative, of which this is a print, showing quite clearly that there was no unerupted tooth. It is in cases of this kind that X-ray pictures are of great value, for all guess-work is done away with. Dr. Van Woert has studied this subject and developed the process until it is simple and absolutely perfect. When he tells you that the exposure was but thirty seconds (just half a minute!) you can see how remarkable it is.

I want to impress upon you again the great value, in certain cases, of determining by these pictures just what the conditions are beneath the surface. In talking this subject over with Dr. Turner and Dr. Van Woert, it seemed to me the profession did not quite appreciate what could be done, and it seemed desirable that a body like this should realize it.

The PRESIDENT. I have the pleasure of introducing an old personal friend of mine, and a new friend of the Odontological Society, Dr. Robt. Good, of Chicago, who will read a paper on the subject of "Pyorrhea Alveolaris."

## PYORRHEA ALVEOLARIS.

*Mr. President and Gentlemen*,—I have been asked to tell you this evening how I treat pyorrhea. My method of procedure I will try to make plain. I first anesthetize the parts with cocain, ten to fifteen per cent., using Parke, Davis & Company's two-and-one-quarter grain tablets, dissolved in a menstruum consisting of the following ingredients:

Fl. opii deod., min. 96;  
Normal liq. aconite, gr. 3;  
Sat. sol. boric acid, dr. 2.

Sig.—Menstruum for anesthesia.

I make my cocain solution fresh every day, using from fifteen to twenty-five drops of the menstruum to one of the cocain tablets. Sharp & Smith, of Chicago, manufacture a needle especially designed for this work, which I will show to you. I pass the needle to the bottom of the pocket, withdrawing slightly to avoid pressure on the inflamed tissues, which will cause pain. After applying the cocain, wait from one to three minutes before beginning to operate. I use a set of instruments especially designed for this work, which you may see. They are made by Lukens & Whittington, 624 Race st., Philadelphia. The sealing-wax on the handles assists materially in controlling the instrument, and also aids the sense of touch. Using the wax in different colors designates the instrument. I always keep them, while operating, in a solution of sulfo-naphthol.

As the treatment of pyorrhea is purely surgical, it is best to have but one tooth under treatment at a time, finishing it before operating further. After thoroughly removing the deposit, don't allow it to remain in the pocket. Apply chemically pure lactic acid warmed, and be sure to have it reach all parts of the pocket. For this also use a hypodermic syringe, the same as for the cocain. When the packing gives out, have it replaced with a new one. To protect the tissues from the overflow of the acid, pack cotton or bibulous paper around the teeth, and for further protection to the mucous membrane, apply oleostearate of zinc. In cases where the teeth are loose they should be held in a rigid position with bands or silk ligature (No. B sewing silk), splints, or other means. For banding, use very thin platinum.

It is essential that every surgical precaution be taken.

Instruct your patients to be particular about keeping the mouth clean. Have them use some good antiseptic mouth-wash. I give mine the following:

*Antiseptic Mouth-wash.*

Thymol, gr. 4;  
Benzoic acid, gr. 14;  
Tr. Eucalyptus, dr. 4;  
Ess. peppermint, dr. 1;  
Chloroform, gtt. 15;  
Alcohol, oz. 3.

Sig.—Gargle. Twenty drops in glass of water used at a time.

Massage is an excellent thing for the gums, when the soreness leaves, using a little powdered sulfur on the fingers. If a tooth is extremely sensitive it is best to destroy the pulp, because it is an

irritant and will prevent a union between the hard and soft parts. In many cases dead pulps will be found; treat them in the usual way. If at the end of three or four weeks a pocket does not close, it is quite certain that a deposit remains; in that event operate again. The successful treatment of pyorrhea depends entirely on the ability of the operator to do thorough surgery. Dr. Harlan has said, "The operator who is able to remove deposit from the roots of teeth is doing the finest surgical work possible."

If I have given you anything of interest this evening, I wish to thank Dr. Younger for it, because he taught me what little I know of pyorrhea.

#### *Discussion.*

Dr. RHEIN. This is a very broad subject to discuss, and we are all probably in accord with the propositions given to us this evening by Dr. Good. There is nothing he has said that any one can cavil at, and the only thing I can do is to possibly emphasize some of the remarks he has made. Of course, the local treatment of this pathological condition is one that is pre-eminently surgical. Outside of that, it is out of the question to get any benefit at all, and the amount of benefit which the patient will obtain is dependent upon following the lines so clearly and so simply outlined by Dr. Good. It sounds very easy, as stated by him, and I might say it is as easy to follow in practice, if the practitioner is willing to do it; but in the course of very considerable investigation of this subject, and discussing this matter with dentists from almost every part of the world that we come in contact with,—the best men in the profession,—it is simply astounding to find how few men are willing to follow out this very simple line of surgical procedure, because of one reason only,—the amount of time that it is necessary to give to accomplish good results. Dentists, on account of the traditions which bind some of us, in regard to the proper fees for what is *called* cleaning teeth, have been found unwilling to give the time to these important operations; and it is a great pleasure to me to see men like Dr. Good, Dr. Eames, of Boston, and Dr. Smith, of Philadelphia, making a public propaganda in regard to this work, because it is something to which the eyes of the profession should be opened. It is really an absurdity to my mind that this work should be turned over to any one class of men. It is wrong to consider this a special form of work. It is work that is the paramount duty of every man who has the mouths of patients in his care. The only reason why so little has been done is because dentists fear the difficulty of being properly remunerated for time which their patients will say is consumed in cleaning teeth, not in treating a pathological condition. That is the only reason why this terrible disease makes the inroads that it does, not only in this country but also abroad. I had the pleasure the past summer of visiting the offices of many prominent dentists abroad, and during that time I had the gratification of having my opinion asked in regard to a large number of cases. I found the conditions precisely what they are here. In other words, the busy operative dentist utilizes all his time filling teeth, because for that his patients have been accustomed to giving him a proper remunera-



tion. As soon as he undertakes work of this nature, he fears he will not be remunerated sufficiently. The point I want to impress in a discussion of this subject this evening, and I am sure Dr. Good will coincide with me, is that it requires no extraordinary skill. I agree with the quotation he has made from Dr. Harlan, that it requires the very finest and keenest kind of surgery, but that is exactly what our finger training has given to every capable dentist. What it does require is persistent work, which is worthy of the highest remuneration. I claim that this work can be very easily done by men who are, we will say, incapable of doing the finer forms of dental work; but it does require patience and tact.

In discussing the treatment, I insist that it is impossible to speak in a general way of the treatment of the various forms of diseases of the peridental tissues from which the teeth get loose, and on account of which we get a septic condition surrounding the teeth. The variations are as numerous as the causes that produce the trouble. A case such as Dr. Hart has described to us, where, eight months after treatment, he found the mouth in splendid condition, illustrates a form in which,—whatever may have been the primary cause of the trouble, whether it was purely of a local nature or was the result of some systemic disturbance,—that cause had unquestionably disappeared; and in such cases it is always easy to obtain a result that is more or less permanent. The worst forms are where the cause is some systemic disturbance kept up at intervals more or less persistently, and which means the necessity for the operator to see the patient at repeated intervals in order to keep the mouth in a healthy condition. These intervals vary according to the gravity, or rather the severity of the disease that is present, but it is necessary on that account, if we are going to treat the disease intelligently, for the operator at the outset to know exactly what kind of pyorrhea it is that he is treating, because, if he does not do that, he is treating the trouble in an empirical way. He is oftentimes deceiving his patient in giving him the idea that by putting his mouth in a healthy condition at the time it will remain in that condition, when it is perfectly easy for him, if he diagnoses his case carefully, to tell the patient just how much regular treatment he must have. After the mouth has once been put in a fairly healthy condition, it does not require by any means the amount of treatment that it did originally, if the patient will come and report promptly for the surgical work that makes itself more or less necessary at certain intervals.

In order to pursue the treatment intelligently, it is absolutely necessary for us to know what has caused the trouble. Understand the cause and it ought to be a simple logical matter to handle the case, but without a proper understanding of the cause of the trouble all treatment becomes more or less empirical.

The form of treatment of individual cases is one that I have never discussed at any length, because the variations are almost innumerable, and no rules can be laid down. The use of an anesthetic in the treatment is often of very great value. On the other hand there is a very large percentage of cases where I find a local anesthetic

absolutely unnecessary, where the work is almost painless to the patient.

I might add, while discussing this, that I think we have at our command a much better form of hypodermic syringe than Dr. Good has shown us, and that is, the all-glass syringe which has been exhibited by the manufacturers throughout the country. Many of us have seen the ones Dr. Darby showed at the National Association. This all-glass syringe is a boon in the treatment of pyorrhea pockets, for this reason,—there is nothing that gives out so much with the old form of syringe, such as Dr. Good has shown, as the packing, on account of the chemical action of the various forms of medicaments that we necessarily use in the treatment of these pockets, and I have always felt uncertain, although I would keep a large number of syringes on hand, when I would be without one that was capable of performing its duty. During the time I have used these glass syringes, that difficulty has been removed. The canulæ of platinum are made in my own laboratory and soldered on to the tips that come with the syringe, so we have an endless variety of curved needles, blunt and pointed and straight—and of all kinds of diameters, which are simply soldered on to the tips which the manufacturers furnish.

I place very little stress on what preparation should be used in the sockets of teeth. Lactic acid is very beneficial; trichloroacetic acid is just as good; sulfuric acid will do the same service, and zinc chlorid is sometimes better than any other of these remedies. What I want to bring out is that there is no one panacea for the treatment of pyorrhæal pockets.

While discussing this question, I do feel like bringing up before this society the question I brought up in a paper on this subject before the Second District Society last year,—the necessity of determining whether any root of a multi-rooted tooth has entirely lost its attachment. I have come to the conclusion that this is a much more common condition than the average practitioner is aware of, and when I find a tooth stubborn in responding to treatment I at once become suspicious of the fact that some root of that tooth has lost its entire attachment. We all know, if we have a single-rooted tooth that has lost all its attachment, that tooth will be immediately ejected from the body. It is incurable, and the tooth will be lost. But of course, in the multi-rooted teeth, if one of the roots has been reduced to that condition the tooth is still held in the jaw by the other root or roots which retain their vitality. In many such cases this necrosed root, because it is nothing more nor less than that, may still be covered almost entirely with gum and not necessarily have reached the state where all of the gum covering the necrosed root is lost. I lay great stress upon this point, that it is necessary in treating the multi-rooted teeth to make the most careful diagnosis of the anatomical condition of each individual root, so as to be sure that a great deal of time is not needlessly wasted in attempting to cure a necrosed root of a molar or a double-rooted bicuspid. I have had dentists come to me and say: "Here is an incurable case. I have it all cured but this one tooth,"

—simply because there is one necrosed root which has lost its entire attachment.

Perhaps some of the gentlemen will remember the young woman with the porcelain roots whom I showed at the clinic of this society, and the excellent results obtained. I want to say that in replacing such necrosed roots with porcelain roots I am twenty times as enthusiastic about it as I was when I appeared before you last winter. The patient I showed there, a governess, moved to Berlin. Dr. Williams saw her mouth in London, and he was very enthusiastic about it. Professor Miller saw the mouth in Berlin later, and I showed the mouth to perhaps one hundred and fifty dentists in the same city in August. Whatever little motion was present in the teeth when I showed her at the Second District Society had entirely disappeared. They had steadily improved. Professor Miller was not in Berlin in August, but the patient told me he was very enthusiastic over the conditions as he had seen them. Dr. Kroner, Dr. Taylor's associate here, saw the patient in Berlin at the same time, and can vouch for the splendid condition of those roots and the gums around them in August last. I take great pleasure in emphasizing this matter, because I believe that this operation has a great future in the treatment of these very severe forms of pyorrhea. I have gone out of my way considerably to make this work as plain as I can, and I am anxious to have it as clearly understood as possible, because I believe one of the greatest savers of the posterior teeth will lie in the ready understanding of what is practically a very simple operation.

Dr. GEO. A. MILLS. As to the systematic care of the teeth, it is a crying shame throughout the profession that we make such an exhibition of our profession through our patients. It is not because we cannot accomplish more, but because we do not. When this matter was introduced to the profession, it was "cleaning teeth at fifty cents and a dollar," or sometimes two or three. The men who were beginners in the line, had to learn *how* to do it to begin with, and I want to say that in my early days I have treated case after case simply for the practice, without any fee whatever. As to the results that may be obtained, Dr. Shepard, a man we all well know, has announced that he never really had a case of pyorrhea develop in his practice. That is putting it strongly, but I believe it to be true. Dr. Smith emphasizes the results he is getting from his work in the same direction. We all know what Dr. Bonwill used to say. I will not be too radical, but I was going to say nine-tenths of the cases are not pyorrhea at all in the sense we should understand pyorrhea from a surgical standpoint in pathology. Many are caused from neglect,—lack of proper care of the mouth. The intelligent men will bear me out in this statement. I have written a paper recently, introducing a new line of thought, and so far as I know, nobody has presented the views I have here espoused. It is based upon physiological prophylaxis,—a line of thinking we have never entered upon. We have gone into prophylaxis to a certain degree, but to my mind we must go farther; my conviction is real, and time will prove it to be true. There is here an opening in dentistry that



young men have never dreamed of, and to them this should be largely recommended. It is hard to turn us around,—to teach old dogs new tricks; the opportunity is for the younger men. I feel if I could go back and begin practice, from what I see to-day, I should rejoice in being able to do it. With the zeal I have in my nature, and the understanding I have, I am going to give my best purpose to it. In regard to this whole matter of treatment, every man who enters into this practice has his own individual method. I should not know what to do with Dr. Good's instruments; I could not use them. I am a Riggs man—*à la* Riggs—all the time. Some men seem to think his instruments are ponderous and not delicate, but I have been complimented hundreds of times by patients and dentists for the delicacy with which I use them. I do much with the engine also.

We want to get a new conception of the real condition of things, that we may be able to minimize the radical necessities in repairs that cost so much to both patient and practitioner. If such a practice can be realized, it should be hailed with joy. We propose, in the future, to labor to that end.

Dr. C. S. STOCKTON. I do not think in all the scope of our profession there has been any other subject upon which so much has been written or printed or spoken as upon pyorrhea. And yet I doubt very much if there is anybody here to-night, or anywhere else, who can tell what pyorrhea is, or what will cure it. That is a very broad statement, but that is about where we stand. I have never seen a case yet that has been cured. I think there are very few cases of real pyorrhea, and I think also with my good friend, and yours,—Dr. Cushing, who has passed to the world beyond,—that the first treatment of every patient who comes to us is to clean every tooth in the mouth. If we did that, cleaned the teeth at the beginning,—there would be very few cases of pyorrhea alveolaris. It is neglect on the part of the patient, going on from year to year. They oftentimes come to you and to me from someone else's hands, and they say: "The last dentist never cleaned my teeth as you have done." How many patients have you had say that to you? You have cleaned their teeth as they should be cleaned, and they were surprised at it. There was not much pyorrhea alveolaris about it; they simply needed cleaning.

Dr. JARVIE. Before the meeting adjourns, I wish to compliment Dr. Good upon his short but very pithy and pointed paper. Every word of it is of value. I want to say also that I do not think it is at all necessary to apologize for bringing this subject of so-called pyorrhea alveolaris before a meeting of dentists. There is not anything connected with the teeth that gives a dentist so much anxiety and the patient so much pain and distress as that same disease. It is not a new disease—not a disease of the present civilization. Examine skulls of the ancients, and you will find roots of teeth covered by tartar—and many forced from their original position by it. I had occasion this past winter to look up all I could find in dental literature connected with the city of Brooklyn, and I found a pamphlet written in 1835, by Dr. H. K. Northall, in which

special attention was paid to this trouble, which was described only, not named. The pamphlet says: "The teeth when loosened by tartar, disease, or mercury may, by a proper course of treatment, be in almost every case restored to the pristine firmness." If Dr. Riggs should not be given the credit for originality, he should be given credit for improving the treatment and stimulating the study of the cause of this disease. I am always glad to have this subject brought up at a dental meeting, because I hope to hear something new in treatment that will assist me in saving teeth which I cannot save at present.

Dr. HUTCHINSON. I want to say that I had great pleasure in witnessing Dr. Good's clinic at Baltimore last May. He undoubtedly succeeded in removing those deposits very thoroughly, and the patient seemed to be enjoying the operation. There was apparently no discomfort. I obtained at the time some of the instruments, and they have been a wonderful help to me, facilitating the operation in every way.

Dr. GOOD. Dr. Rhein said he did not think there was any special skill required. I cannot agree with him. I think the more one works at pyorrhea the more one's skill is developed. Every dentist should try to relieve his patients as well as he can, and if he cannot do so he should send them to someone who can, the same as we do to any other specialist.

In regard to the glass syringes, I used them, but they are so easily broken that I prefer the hypodermic.

Remedies: It makes very little difference what drug is used for a stimulant; it is what we do before using the drug that gives the desired results. No matter what remedy is used, if we do not remove the deposits the tooth will not become solid. I have tried sulfuric acid, but I found it made the necks of the teeth very sensitive. Have you not found that, Dr. Rhein?

Dr. RHEIN. I have not used it in fifteen years. I have seen some cases, however; but I think it makes very little difference what form of escharotic is used.

Dr. MILLS. Do you not find where the necks are exposed, that the pulps become very sensitive?

Dr. GOOD. Yes; I have cases of that kind and destroy the pulp, after which the gum will become attached.

In regard to changes in the surface of the enamel, Dr. Younger taught me how to do that. I have seen him remove the entire surface of dead enamel, as he calls it, until he comes to the true enamel, and he gives that a high polish like glass. He used a fine stone, then a coarse disk, and then a finer one, until he got as high a polish as possible.

Dr. JARVIE. What do you mean by the true enamel?

Dr. GOOD. That is an expression he uses. He says when people get along in years, from taking medicines and various other causes the outside surface of the teeth becomes disintegrated, as it were, and it is not a true enamel, as he explains it; and by removing that surface, and giving the tooth a high polish, you reach really the hard enamel.

I would like Dr. Stockton to come to Chicago. I think we can show him some cases of pyorrhea that are permanently cured, that is, as permanently as anything can be in our line of work.

In regard to the sterilization, I keep the instruments standing in a glass like that [illustrating]. I use sulfur-naphthol, but you may use anything you choose.

Adjournment.

---

A REGULAR meeting of the New York Odontological Society was held on Tuesday evening, November 19, 1901, at the Academy of Medicine, No. 17 West Forty-third street, New York city. The president, Dr. W. W. Walker, occupied the chair.

#### INCIDENTS OF OFFICE PRACTICE.

Dr. S. G. PERRY. I have here a little thing which may possibly be worth showing. It is a cast showing an amalgam inlay made and set on the posterior approximal surface of a lower first molar, as if it were made of porcelain. The tooth was badly decayed, and I did not have the courage to fill it with gold, and I did not like to use amalgam because of the fear of crumbling of the edges in a short time. I took an impression of the prepared cavity with impression compound, and proceeded as I would with porcelain. The impression was filled with plaster (the Ash preparation), and the cast when hard was boiled in stearin. This so hardened it that it could be worked upon without injury to the edges. Into the cavity amalgam was packed and allowed to harden over night. This amalgam inlay was set into the cavity in the tooth with the Harvard cement as if it were a porcelain one. It fitted perfectly, and I believe it will last longer than an amalgam filling made in the usual way. A perfect restoration of the tooth was made, as shown by one of the casts. The other cast shows the cavity as prepared for taking the impression. This amalgam was used instead of the porcelain because it would not be so brittle.

Most of my porcelain inlays are made by burnishing the platinum into these plaster cavities, instead of into the cavities in the natural teeth. I think my mechanical expert has been able to get as good a fit in this way as when I have burnished the platinum into the tooth, and much of my own time is saved thereby. We have been most successful with platinum known, I believe, as the one-thousandth of an inch in thickness. This is so thick that naturally the inlay does not fit the cavity absolutely. To overcome this I conceived the idea of varnishing the impression with several coats of shellac varnish used about as thick as thin syrup. This increased the size of the cavity and the inlay. After several trials I found that three coats of this varnish (each one being allowed to dry) was about right. Five or six coats would make the inlay so large that it would not go in the cavity. In one instance a trial of four coats made such a close fit that I had the greatest difficulty in getting the inlay out of the cavity, into which it had been put without cement, for trial. Therefore I have settled down to three coats as being



about right. Of course much depends upon the thickness of the varnish.

I would here state that for approximal cavities in the incisors I proceed as follows: After the teeth have been wedged and the cavities prepared, I fill them with warmed impression compound, first being careful to oil the cavities. Then I trim off the excess of the compound and sandpaper exactly as with a gold filling. Then with the point of a fine excavator, the compound being cold and hard, I remove it, and after varnishing it as before described, I have it set in plaster. When the plaster is hard and the compound is removed, I have an exact duplicate of the cavity in the tooth. Into this, after boiling in stearin, the platinum is spun with a burnisher, and the porcelain is baked until even with the edges of the matrix. I think in this way a better result can be obtained than by attempting to burnish the platinum into the natural tooth through such a narrow space.

Dr. WM. CARR. About six weeks ago I met Dr. Deane, who said that he was experimenting with a new material for filling pulp-canals. It was sealing-wax, and he stated that thus far he had been uniformly successful in using the material.

About two weeks ago a Mexican came to me for professional services, having a left lateral incisor badly broken down. It had been filled with cement, but there was so little of the tooth remaining that there was nothing to do but to crown it. While preparing the pulp-canal I found what I at first supposed to be gutta-percha, but it was harder and more brittle than gutta-percha. Upon investigation it proved to be sealing-wax. The patient informed me that this material had been there for about five years; that the dentist who filled it used, as he expressed it, "a red material from a little bottle, and with a little fine wire he pumped it in." This was evidently an alcoholic solution. I put on a porcelain crown and saw the case ten days afterward; the surrounding tissues both before and after adjusting the crown seemed as normal as if the pulp were alive. I wish to ask if anyone present has used sealing-wax for this purpose, and, if so, what were the results.

Dr. PERRY. Mr. Charles Tomes, many years ago, in this country, advocated the filling of the pulp-canal with alcohol, then plunging into it a sharp spiculum of shellac, and then letting the alcohol evaporate.

I looked around for Dr. Delos Palmer, and hoped he would be here to tell us of his method of filling the roots of teeth. It is the use of balsamo, putting it in with warm wires, etc. He is very enthusiastic about it, claiming to make not only the accurate adaptation which is necessary, but also that the material itself is antiseptic.

Dr. J. F. P. HODSON. Dr. Delos Palmer gave us a clinic a year or so ago on that very subject. He takes a fine platinum wire and heats it by electricity, and inserts into the root-canal. The balsamo del deserto is liquefied by the heat and follows the wire by capillary attraction to the end of the canal, filling it perfectly. It was beautifully shown here at the clinic, and I think the gentlemen remember it.

Dr. N. W. KINGSLEY. It occurred to me, when Dr. Perry was speaking, that he was taking a great deal of unnecessary trouble to overcome what he thought was a bad joint. I have made many of these restorations after the Jenkins method, by using gold (I never used platinum), bringing it in close contact with the edge of the cavity. In making the matrix, I think if you use sufficient breadth to the gold and get your matrix close to the edge of the cavity, there is no danger of any misfit. I might say I have never seen any. The extreme thinness of the gold is such that when it is peeled off and the inlay dropped into the cavity, nothing is perceptible. It is certainly nothing more than is really necessary, for the finest cement to fill and hold the inlay. The space is almost imperceptible,—only a line. I hardly see the necessity for such a roundabout way as Dr. Perry describes, unless it comes from using platinum; the other method produces such perfect results in my hands. I have seen many of Dr. Jenkins' cases where it would require better eyes than mine are now to detect the line. Only a few days ago a patient came to me from him, and I think every one of the lower front teeth, most of the molars, and quite a number of the upper ones, had porcelain fillings. The lower incisors on the approximal surfaces were something marvelous. When I first looked at the mouth, I could hardly believe she had had anything filled, and only by putting on better eyes than my natural ones could I detect anything. That is the ultimate ideal that can be reached. It is reached in his hands. I will not say it is reached in mine, but it is being done, and it hardly seems necessary to take so much pains as Dr. Perry does, unless the platinum makes it so. The trouble is in not having cavities sufficiently accessible. I cannot imagine how in the world Dr. Jenkins managed to get the matrices in the approximal cavities in those lower teeth; the teeth were all close together as they would be in a perfect dental arch; and yet there was a filling on each side of every one.

Dr. PERRY. That is very interesting and very true. I believed from the first that the Jenkins system would give the best results, so far as adaptation is concerned, because the gold that is used is thinner than the platinum; but you cannot use the high-fusing body with the gold, so it is not possible to get the hardness in the quality of the inlay, and the glaze necessary to secure retention of color,—though I understand that now the Jenkins body is improved so that discoloration does not follow.

The PRESIDENT. I have seen many of Dr. Jenkins' cases, and while the work was always beautifully done, the colors often were bad. I have also seen a great number of Dr. Head's patients, and I must say his colors match more closely than any others I have ever seen.

Dr. KINGSLEY. I cannot explain what you say in any other way than that the porcelain chosen was not properly matched with the natural tooth, and it is quite possible that the material at that time was not so uniform as to bring always the same results. However, with the material on the market now (I have considerable of it, and have been using it), I certainly can match almost any tooth

I have seen, or my eye for color is defective. There are about twenty of the colors, and with a little mixing, if one cares to be excessively particular, one could match almost anything.

I am a little prejudiced, I grant you, and this prejudice comes from my experience of thirty or forty years in the manufacture of block teeth for my own private patients. Knowing perfectly well the large amount of allowance that I had to make for shrinkage of the material, I can hardly conceive that the high-fusing body, which is almost identically the same as it was then and has been all along, can be used without drawing the matrix out of shape. With the low-fusing body Dr. Jenkins uses, there is no drawing of the matrix when properly invested in the asbestos. So far as the colors are concerned, I am aware that the inlays for the patient Dr. Jenkins had at Niagara were not all so perfectly matched in color as I would have liked to see. The work was done at my office, and under my observation.

Dr. GEO. EVANS. Last month I read a paper before the First District Dental Society [see DENTAL COSMOS for January, 1902, page 25], and presented a number of specimens of different porcelain bodies, which I thought in a measure settled this question,—that is, as to which shrank the most. If some of the gentlemen who are present this evening had attended that meeting, and seen what I had to show, I think they would have better understood this question of shrinkage of the high- and low-fusing bodies. I showed a succession of different fusings, the result of a series of experiments, which took me considerable time to prepare. They consisted of the first, second, and third fusings ranged in line, showing the results in each case. These successive fusings, which consisted of different grades of porcelain from the Jenkins to the high-fusing porcelain of The S. S. White Dental Manufacturing Company, demonstrated that the higher the point of fusing, the less shrinkage occurred.

As I am on the floor, I will speak on the question of matrices, gold foil and platinum. When you make the matrix the way Dr. Perry described, the platinum approximates one one-thousandth inch in thickness at the edges. When you manipulate it as Drs. Capon, Head, and others do, you reduce it probably to at least one two-thousandth of an inch in the second burnishing after the first baking, which is of that much advantage. When you use gold foil No. 30, which is a little less than one one-thousandth inch as measured by the micrometer gauge, and burnish it as Dr. Jenkins, and I suppose Dr. Kingsley, does, you still further reduce it. In the use of gold and the low-fusing body you consequently obtain an extremely close edge,—as close as by any process.

The president then introduced the essayist of the evening, Dr. G. A. MILLS, who read a paper entitled "The New Departure of the Present Century," which was afterward discussed by various members.

Adjournment.

W. J. TURNER, M.D., D.D.S.,  
*Editor New York Odontological Society.*



ANNUAL CONVENTION OF THE SIXTH, SEVENTH, AND EIGHTH  
DISTRICT DENTAL SOCIETIES OF THE STATE OF  
NEW YORK.

(Continued from page 287.)

SECOND DAY—*Evening Session* (continued).

Dr. J. B. ERNSMERE read the following paper:

SOME ADDITIONAL LIGHT ON THE ETIOLOGY OF PYORRHEA  
ALVEOLARIS.

From observations that I have made for a number of years I am convinced that the daily use of coffee as a beverage for a considerable length of time on the part of any person will be attended eventually by a pyorrheal condition of the teeth. I do not mean to say that a person cannot have pyorrhea alveolaris without being at the same time a user of coffee, but I do mean to say that the habit of drinking coffee tends to produce pyorrhea, and that it is probably impossible to cure the disease, even when taken in hand in the earlier stages, if the habit of drinking coffee is continued by the patient. It has been generally understood for several years that pyorrhea alveolaris arises from the same conditions in the human system as produce rheumatism, gout, etc., and is generally associated with these diseases,—coincident with them. Now, one of the evidences of a gouty or rheumatic condition of the system is the presence in excess of uric acid in the blood,—waste material which should be worked up by the liver and eliminated. Every physiologist knows that the use of coffee hinders the elimination of tissue waste, and that its use is therefore injurious in the presence of gout or rheumatism, and it is always forbidden to the patient suffering from either disease, and *should be forbidden by the dentist to the patient whom he is treating for pyorrhea.*

Two years ago a physician in my neighborhood whom I knew very well came to me one morning to ask if there were any suggestions I could make concerning an obstinate case of what he called stomatitis, from which one of his patients, Mrs. S., was suffering. He said her gums were turgid and swollen, would bleed on the slightest touch, and that blood would ooze from them at night while the patient slept; he had lanced two pyorrheal abscesses. There were no cavities in her teeth that he could see. He said he had tried all the antiseptic mouth-washes in vain. Having come to the end of his resources, he knew not what to do next. I suggested that he put the patient on the same course of treatment that he would use if she had rheumatism, and if she had been in the habit of drinking coffee, that she stop it. At his request I went to see the patient that afternoon, to remove some tartar from her teeth which the doctor thought might be irritating the gums, and found the conditions as he had described them. There were no cavities and not a great deal of tartar. The patient was in about the seventh month of pregnancy and therefore could not come to the office. She said, in reply to my inquiry, that she

had usually had coffee for breakfast and that lately she had generally partaken of two cups. On stopping the use of coffee and taking the doctor's medicine for rheumatism there was an immediate improvement, and in a few days the trouble had apparently been wholly relieved.

A lady who has been a patient of mine at intervals for the last six years, and who had not at any time shown any signs of pyorrhea, came to me recently suffering from a severe pyorrheal abscess. I said to her, "You have been drinking coffee lately much more than usual." "Yes," said she, "I have. We have had our house filled for several weeks with Pan-American roomers and I have had to work for them and wait upon them. You can understand it has been hard work, and I felt I must have something to keep up on, and therefore have been drinking several cups a day of good strong coffee."

A gentleman came to me suffering from pyorrheal swelling and inflammation about one of his teeth. On inquiry I learned that he had never before had similar trouble and that he was a visitor to the Pan-American Exposition. He had been away from home for two weeks, and for that length of time he had had coffee for breakfast every morning. When at home he did not use it, but being among strangers he had partaken of what was served.

Another case I have in mind is that of a trained nurse who had been drinking coffee in order the better to keep awake at night while on duty. She came to me with the inevitable pyorrheal conditions.

Another case was that of a young lady, teacher in one of the public schools. On examining her teeth I saw evidence of the beginning of pyorrhea. In calling her attention to it I advised her, if she had been drinking coffee, to discontinue it. She said in reply, "My physician has already forbidden me to drink coffee."

The cases I have cited are a few only of a great number which I have observed.

In conclusion I would say that in a book on South America which I read last winter the writer comments upon the fact that the majority of the people of both sexes in Rio de Janeiro, where coffee is used by almost every inhabitant, lose their teeth by pyorrhea at a comparatively early age. He does not hint that the use of coffee has had anything to do with bringing about this condition, but when I read his remarks I drew my own inferences.

#### *Discussion.*

Dr. M. O. COOLEY, Niagara Falls, doubted whether there was any connection whatever between coffee and either pyorrhea or gouty and rheumatic affections.

Dr. HOFHEINZ did not believe that a condition so prevalent as the gouty diathesis, and that manifests itself in so many different ways, could be caused by such a habit as coffee-drinking. We must find a wider cause than this seems to be. It may be that coffee acts on the nerves, and by lessening the power of the eliminative organs might have a tendency to increase the deposits about the teeth and thus produce pyorrhea, though this is not as

yet proved. Pyorrhea, we must remember, is a disease of teeth that are alive; he had yet to see the first replanted tooth that was affected with it even though all the other teeth in the mouth were affected.

Dr. J. WILLMOTT, Toronto, said he was not an authority on pyorrhea, and was very pessimistic in regard to any method of treating it. Did not believe cases were cured by treatment confined to the sockets of the teeth. Systemic treatment is also necessary. As to why pyorrhea is a disease of live teeth he had no theory, but his clinical observations have led him to that conclusion. Dr. D. D. Smith, who has made very extensive observations, says that he has never seen a devitalized tooth that developed pyorrhea. Of course devitalized teeth may have pyorrhea, but it is developed before the tooth is devitalized.

Pyorrhea is more common in the United States than in Canada, and he thought this is because more meat is generally eaten here. He believed excessive eating of meat was answerable for pyorrhea and as well for the uric acid diathesis which is so widely spread.

Dr. HOFHEINZ asked Dr. Ernsmere if his theory was that the coffee-drinking acted directly or indirectly to cause pyorrhea.

Dr. ERNSMERE said while he could not, with the evidence he had, say positively that coffee-drinking produced pyorrhea, still he firmly believed that it did, and that it produced the rheumatic or gouty condition as well. Physicians forbid the use of coffee in such diseases because it hinders the elimination of tissue waste, which probably it does by action on the liver.

The subject was passed, and the following paper, by Dr. F. A. BALLACHEY, Buffalo, was read:

#### AMALGAM: THE PLACE IT HAS WON IN DENTISTRY.

The highest mission of any profession is to bring benefit and well-being to mankind. The greater the proportion of mankind that is brought within the range of the benefits which any profession has to bestow, so much the greater is that profession. If a profession dispenses its blessings to only the favored few, while the great mass of humanity is left outside, it has not attained its highest usefulness in the world, which it cannot be said to have attained until its benefits are reasonably within the reach of at least the large majority of mankind. These things are true of our profession of dentistry in a marked degree. Work for the preservation of the natural dental organs is almost a universal necessity, and it is apparently on the increase in this country. As some one has expressed it, "It is a part of the price we pay for a high state of civilization." The savage races are not nearly so much troubled with their teeth, but in this country, and in fact in nearly all civilized countries, everything seems to militate against the well-being of our masticatory organs. In our enlightened condition we know too much about the art of cooking, and our food is too nearly prepared to enter our stomachs before the teeth have a chance at it at all.

So far as its ability to do it goes, the dental profession could meet and grapple with this necessity without the aid of that filling



material which forms the subject of this paper, except perhaps in a few cases where it is clearly better to use a plastic than a gold filling; but there is another side to the question, viz, the financial side as viewed from the standpoint of the patient. I think we all admit that a great majority of our patients would find it quite impossible to have their natural teeth preserved if they had to pay for each one the fee which must or ought to accompany a large and tedious gold filling. Perhaps this may seem to many an unimportant point, but it seems to me that it is a most practical one. A few people are, so to speak, "made of money," but the greater number are not, and it is to this latter class that the advent of amalgam into dentistry has been a great boon. In a word, the coming of amalgam, as a permanent filling, into our profession, has made us more useful to mankind; it has made it possible for us to bestow our benefits almost universally, and in so doing it has made us a greater, wider, more far-reaching institution for the blessing of humanity.

The history of amalgam in dentistry is a most interesting one. No other filling material has caused so much controversy and had more bitter enemies than has amalgam. It was introduced into America about the year 1833, and the peculiar circumstances of its introduction may well be noted here, because they formed the first scene in the drama of what came to be known as the "amalgam war." Two Frenchmen called "the Crawcours" came to New York about the year 1833, and opened an establishment for filling teeth. They were not regular dentists, but were out-and-out impostors. They used an amalgam of coin silver and mercury similar to that introduced in Paris in 1826 by Taveau. They advertised their filling very widely under the name of the "royal mineral succedaneum," and, as some of the historians have phrased it, "had a wonderful run of custom." Not only did the cheaper class of patients go to these empirics, but the very best people, patients of the leading dentists of New York patronized them, preferring the much more easy operation of having this plastic material inserted to the tediously long sittings for the gold plugs they had been used to. It can better be imagined than described what an uproar this created in the dental world. The work of the regular honest operators was no longer in demand, and the whole profession was up in arms about it. It is difficult to say what would have happened if the Crawcours had not defeated their own ends. It seems that they handled their filling most carelessly, not excavating their cavities, and in some cases putting the paste between the teeth where no cavities existed! This sort of thing soon produced a popular wave of indignation against them, and it rose to such a pitch that they were forced to fly the country for safety.

Following this episode were many years of unrest in the dental world. The "amalgam question," as it came to be called, continued to grow in importance. The rout of the Crawcours did not put an end to the use of their filling material. It had too many apparent advantages to be left alone. A good many operators

began using it, and among them some of the best. The majority of the leading dentists remained very hostile to it, however, and the most important actions of the earlier dental societies were in connection with this question.

The first official step of the amalgam war was taken by the American Society of Dental Surgeons in 1841. Other societies also passed resolutions condemning the use of amalgam, but the American Society was the most bitter opponent, and in the year 1845 their opposition had reached such a pitch that they appointed an inquisitorial committee to inquire of each member of the society, individually, just what his position was on the question, and to obtain a definite answer from each one. This investigation was followed up the next year by the drafting of a pledge to the effect that the subscriber pledged himself against the use of amalgam under any circumstances in dental practice, and protested against its use by others. The members were requested to sign the pledge under penalty of expulsion from the society. At the same meeting of the society circular letters were sent out to the periodicals of the country condemning the use of amalgam, and advising the public of the action which had just been taken by the society. Such drastic measures naturally enough produced a great revulsion of feeling, and owing to this the American Society in the year 1847 drew in its horns, so to speak, and modified considerably the pledge issued in 1846. Finally, in 1850 the resolutions passed in the years 1845 and 1846 relative to the pledge and so forth were rescinded and repealed. This was the last official act of the amalgam war, and it showed a clear-cut victory for amalgam. Opposition to it did not end by any means at that time, but the subject became more one of friendly debate than of violent and unreasoning opposition. That this opposition was really an unreasoning one is shown by the fact that the opponents of amalgam really knew very little about its properties. They conducted few, if any, experiments, the more zealous claiming as a virtue that they had "never touched amalgam."

We have no right to criticize these earnest opponents of amalgam too severely. They were stubborn and prejudiced, it is true, but they conducted their fight with a firm conviction that it was for the well-being of the profession. And who shall say that it was not, after all, for the highest good of our profession that this war was waged? If amalgam had been quietly accepted as an easy way over difficulties, how inestimably lower must have been the standard of dentistry to permit of such things being possible. All honor to these men, even if they did make mistakes! They were the stalwart founders of a worthy profession, and they were men who did not hesitate to sacrifice themselves for the good of that profession. It is largely due to this honesty, integrity, and pluck that we stand where we do to-day. It is an almost universal law of nature that the strongest force is that which has had much to contend with and has survived. The giant oak was never reared in a hot-house; it requires the rushing wind and hurricane to develop that king of trees and bring it

to perfection. Every tempest it withstands leaves the roots more firmly fastened in the earth and knits the branches more securely to the trunk. It was so with amalgam. The violent storm of opposition which had been hurled against it set fair men thinking, then experimenting, and so it got its hold. There was a need for it in the profession, and it was found that it went a long way toward satisfying that need. But it was a most unsatisfactory kind of filling for many years,—in fact, until quite recently,—and we cannot wonder that it met with much opposition when we consider both the manner of its introduction and the way a great many fillings behaved after insertion.

There had always been a searching after some plastic material which would do for a permanent filling. Before amalgam was introduced, fusible metal was tried for a long time with very indifferent success. About the year 1826, Taveau, of Paris, introduced what he termed "silver paste," which was a mixture of pure silver and mercury, as a permanent filling. This was the first kind of amalgam used. A little later coin silver instead of the pure metal was used, as it was so much more convenient. The next combination of importance was Evans's, which was introduced in 1848. It contained pure tin and cadmium, but was not a success and was given up, Dr. Evans himself recommending the discontinuance of its use. In 1855 Dr. Elisha Townsend, of Philadelphia, introduced an alloy containing  $44\frac{1}{2}$  parts of silver and  $55\frac{1}{2}$  parts of tin. This alloy was in common use for many years, but was not the success which it was hoped it would be. About this time the properties of amalgam began to be more thoroughly investigated from a scientific standpoint. The men who set about doing this came to be known as the "new departure corps." Their efforts were not limited to amalgam, but included plastics in general. Much good resulted from the work of this body of investigators, but they obtained very little accurate or useful knowledge on the subject of amalgam. Much experimenting was done, and it was found that those alloys containing more than 50 per cent. of silver gave the best results. But their means and methods were not such as to insure practical or definite information in their results. It remained for Dr. G. V. Black to perfect instruments whereby definite knowledge could be obtained.

In 1895 Dr. Black published his first articles on "The Physical Properties of the Human Teeth, and Filling Materials," dealing first with the changes which occur in the teeth under various hygroscopic conditions, their strength under crushing stress and so forth, and then with the filling materials. His instruments were arranged so as to test amalgam accurately with regard to the flow, shrinkage or expansion, resistance to crushing stress, and in fact every caprice to which amalgam had been found to be subject. His work along this line was most thorough and conclusive. He did an enormous amount of experimental work. All the leading alloys were tested under all possible circumstances, as also alloys of his own making. It became evident that an alloy containing about  $72\frac{1}{2}$  of silver and  $27\frac{1}{2}$  of tin gave the best results.



It was found that the flow was almost invariably increased by the addition of other metals to the simple tin and silver. Dr. Black's article in the *DENTAL COSMOS* for July, 1895, dealing mainly with the flow of amalgam, is most interesting, as it showed how the same amalgam in different mouths will produce very different results. In the next number the subject of expansion and contraction was very exhaustively dealt with, and later on (in December, 1896) came an article dealing with the annealing of alloys. The best part, however, of Dr. Black's work is the practical use to which it has been put. It did not end with experimentation, but as a result of it an alloy was placed upon the market a few years ago which more nearly approached perfection than anything before produced, and to-day it is possible for us to use amalgams known to neither shrink nor expand. To Dr. Black and those who worked with him during all these experiments the profession of dentistry owes a deep and lasting debt of gratitude for the light thrown upon this most difficult subject.

And so amalgam has risen. From being the most despised and hated of all materials for filling teeth, it now stands second only to gold as a general filling material. It is no longer a disgrace to use amalgam; it has found a large and an honorable place in dentistry. But shall it be said that the advent of amalgam has lowered the standard of our work?—that as a profession we are not the equals of our predecessors who used nothing but gold plugs? It should not be so. It is not such an easy matter to put in a really good amalgam filling. How often, even with the splendid alloys which we have to-day, when we look at our fillings put in a year ago, do we see the dreaded "black ditch" which Dr. Black speaks about, or the edges broken away, or something else gone wrong? We need to exercise more manipulative ability; there is abundant room for it in the insertion of amalgam fillings. We should not have so many failures, with all the advantages which have come to us through the hard work of others; let us try to prove more worthy successors to these pioneers. We are too apt to think that because we use a good amalgam it will be all right, but that is not enough. A good amalgam poorly inserted is not much better than a poor amalgam well inserted; in fact, it is not nearly so good for the operator, because every filling well put in is twice blessed: it does the operator good as well as the patient. It is a law of nature which we cannot deny, that a piece of work well done is a source of blessing to the one who does it as surely as it is to the one for whom it is done.

This paper is not a plea for more amalgam fillings. We have enough of them; we have too many of them,—we do not do enough gold work in the posterior teeth to-day. But it is a plea for better amalgam fillings. With our present advantages we ought to do better work than was ever done before. Do we do it? Do we at least aim at doing it? Each must answer these questions for himself. For myself, I know there is room for improvement. There is a large field in dentistry for the use of amalgam; let us give it a good fair and honest chance every time.

Let us put our best effort into it, when it is indicated, as we do into gold, and perhaps in another half-century there will be almost as great an improvement in it as there has been in the past fifty years.

### *Discussion.*

Dr. FRANK FRENCH, Rochester, regretted that the author of the paper had not indicated its scope more accurately in its title. He calls it "Amalgam: The Place It has Won in Dentistry," when in fact it is rather a history of amalgam; the difference in the title, however, does not detract from the value of the paper. One of the unfortunate things about amalgam is that it has generally been regarded not only by dentists, but by the people also, as a cheap filling, and it carries this weary burden to-day. In seeking cheapness for the patient we take away the very element of success, viz, thoroughness. We are not receiving adequate compensation for thorough preparation, and the natural sequence follows that we slight our work, for no man will take the time and pains necessary to do good work unless he receives compensation that will justify such expense of time.

Who is to blame for this condition of things? Clearly, the dentist. He has educated his patients to expect that kind of work, and they are satisfied. This makes it cheap from the patient's standpoint, but what about the poor dentist,—where does he come in? Good work can only be done when the pay is good in proportion. The cavities should be as thoroughly prepared, filled, and finished for an amalgam filling as for one of gold. When we can do this we shall see amalgam take its proper place in saving teeth. From its first appearance amalgam was received with more or less favor, and has continued to grow steadily in the regard of the careful members of the profession.

Many years ago he saw in a drug-store a package labeled "Royal Succedaneum, or Every Man His Own Dentist." It consisted of a smaller package containing enough filings to fill a good-sized cavity, also a small phial containing a globule of mercury, with instructions how to mix it and press it into the cavity, all for twenty-five cents. This was certainly cheap enough!

There was a time when he had thought gold was the only proper material for a filling; to-day he is ready to acknowledge that more teeth have been saved by amalgam than by any other material.

Dr. H. B. HUYER, Buffalo, said that amalgam had won for itself a position in dentistry that was unassailable. It saved teeth as well, in many cases, as would gold, and saved teeth that gold would not save. A Buffalo dentist had expressed regret that his patients would not let him insert gold in the posterior teeth, but he was quite convinced that in many cases amalgam was far better adapted for such fillings than gold.

Dr. J. B. WILLMOTT congratulated Dr. Ballachey upon his successful paper. In teaching dentistry it was his plan to call the attention of the classes to the history of amalgam as an interesting phase in the development of dentistry. When he was studying dentistry, operators made their own amalgam from coin silver,

by preference the American silver dollar, as it contained less copper alloy than the smaller coins and thus made a better amalgam. This was a good amalgam, made better fillings than modern alloys, but the color was so bad that mixtures of tin and cadmium and palladium were introduced. The two latter metals were found to be detrimental, and now nearly all amalgams are practically silver and tin alloys, but they do not give better results than the original coin silver fillings did. As to the recent studies in amalgams, he held that Dr. Flagg was entitled to much of the credit given to Dr. Black. Dr. Flagg's work had not the same scientific basis as Dr. Black's, but his conclusions are practically the same, and he doubted very much whether much better fillings were made now than before Dr. Black's investigations were made known. He hoped, however, that these investigations will be continued; only one aspect of the question has been touched as yet, the real "inner cussedness" of amalgam fillings has not been touched upon. If we examine our best amalgam fillings a few months after they are inserted we shall find they have changed in shape, they have drawn away from the margin and left space there that will permit the oral fluids access to the cavity. He charges this change of form to the tendency that mercury has to migrate in the filling. This migration does not take place suddenly, but gradually, extending over months of time, and as it does this the filling must change its form. If a tooth is filled with amalgam mixed in such a way that the upper half of the filling will contain two-thirds of the mercury and the lower half one-third, then in the course of time the excess of mercury in the upper half of the filling will gravitate down till the mercury is nearly evenly distributed. The lower half, containing more mercury than before, will of course be more bulky, while the upper half will be correspondingly decreased in bulk; it will project from the cavity and draw away from the sides. If this happens it is because we have failed to make a homogeneous mass of our amalgam, have failed to mix the amalgam thoroughly and evenly, and the remedy is to be more thorough in our preparation. If we pay attention to this point there will be less liability of trouble.

Dr. BALLACHEY admitted the justice of the criticism of his title, but the title had been chosen and sent to the secretary before the paper was written. He thanked Dr. Willmott for his explanation of the changes in amalgam fillings. It was new to him, and sounded reasonable. He had felt backward about preparing his paper, as there were so many men older than he who could largely from their own experience have written a history of amalgam, while he had to obtain all his information from reading.

The subject was passed, and the following paper, by Dr. J. J. MADDEN, Buffalo, was then read:

#### SURFACE MARKINGS UPON THE TEETH.

Nature's method of construction of the teeth may be read in the plainest language by studying the markings upon them. Each line of calcification may be said to represent a chapter in her book.



When her building process is suspended through disease, the point is marked in such a manner that we are able to tell, by the markings upon the enamel, at just what time the trouble occurred. When the work has gone on without interruption, the markings present themselves in the form of grooves, ridges, sulci, and fossæ. Each of them gives us an invaluable guide in the carrying out of operations upon the teeth, and if their true significance is not considered our success is placed in jeopardy.

The grooves are of two varieties, viz, *developmental* and *supplemental*. The first mark the coalescence of the lobes or plates of enamel, while the latter are the finer ones found upon the surface of the molars in particular. The knowledge of the exact location of the developmental grooves is very important, for the reason that the tooth is less resisting to the onslaught of decay in these grooves, and because the enamel is not as heavy at these points; and again, they are found to be deep, sometimes taking on the form of fissure.

The ridges are usually found forming the boundaries of the crowns of the teeth, and are divided into marginal, triangular, oblique, and transverse. The enamel is heavy, and in turn they encroach upon the body of the dentin of the tooth.

The sulci and fossæ are found upon the occlusal surface of the bicuspid and molars. The locations of these normal surface markings should not be lost sight of, nor the very important part they play in the scientific preparation of the cavity for filling. I feel safe in saying that, if we would pay more attention to the construction of the incisors, the chisel would be brought into use in many more cases, and many successes would supplant our failures. Have we not seen case after case where the lingual surface has been used to form the floor of the cavity, and a short time afterward we could see signs of infiltration, and a breaking-down of the marginal ridge? This knowledge of the topographical markings is just as essential to us as dental operators as the marks upon the body are to the surgeon.

The grooves are, metaphorically speaking, the highways to our offices. From the time of the eruption of the first molars until the third molars are in place it is a battle to keep the surfaces intact. A point not to be lost sight of is the deep penetration of decay that we often find upon opening into the grooves and sulci, forming, as they do, inviting places for the growth and development of bacteria. The ridges upon the teeth play a very important part in the outlining of the cavity, on account of their seeming solidity and firmness, but it behooves us to decide in a very careful manner before we use them as a supporting base for filling material. I have in mind the marginal ridges of the bicuspid and molars in connection with the filling and finishing of mesial and distal cavities. Nowhere is the knight of the chisel more needed than in the preparation of these cavities where decay has weakened the grinding surface. Picture with me, if you will, the well-defined marginal ridges on the bicuspid and molars, inclosing a concave surface broken by grooves and ridges, and these taking

the force of occlusion and mastication. It has seemed to me that it would be a very small cavity with easy means of access that should be confined to the one surface, mesial or distal. I have observed that, when decay has attacked the mesial or distal surface of a bicuspid, disintegration is likely to form a union with the mesial or distal pits, as the case may be. Many cases might be cited, tending to show how important a rôle the ridges play under the stress of mastication, and again, when they have become undermined through decay they contain the poorest material for supporting a filling.

Another group or set of markings that we meet are those formed during the calcification of the teeth. How beautifully and indelibly written is the story of the calcification of the teeth! From the fifteenth or seventeenth week of embryonic life until the twentieth or twenty-first year later, nature is busy building the sentinels of the tongue. How jealous she is of her work and time is seen when disease endangers the health of the child. She stops her work for a time, and when she returns we know of her absence by the transverse lines and depressions seen upon the teeth, and all the calcium-containing foods known to science could not repair the loss. We ought to have clearly defined in our minds, in the majority of cases, the different periods of calcification of the permanent teeth, beginning with the first molar at twenty-five or thirty weeks of embryonic life to the completion of the crowns of the third molars between eleven and twelve years.

Eruptive diseases during the early life of the individual, say between one and one-half and five years, often leave their marks upon the anterior and bicuspid teeth, and constitute dyscrasiæ. Again, tendencies are inherited. A number of years ago a prominent English writer laid great stress upon the effects of inherited syphilis upon the teeth, pointing out the peculiar concentric shape of the edges of incisors, together with the peculiar ashen hue of the enamel and the general shape and outline of the tooth. We should be very careful, however, on meeting with teeth approaching this description, as markings of this character might be confused with the three tubercles forming the first points of calcification. If such a diseased condition has been inherited, other tissues will show better evidence of the fact than the teeth, while the latter will help to confirm the diagnosis.

A most peculiar and compensative condition is sometimes seen upon the occlusal surface of the first molars when the whole surface presents an unformed condition; the dentin is of a hard and firm nature, and very resistant to decay. I recall two or three young patients with the first molars in such condition, and it is surprising to see how the dentin serves the office of the enamel. With the anterior teeth, pigment matter is readily deposited in the depression, and often presents an unsightly appearance. I have seen cases in which the places have been filled and operated upon, when the patient was from nine to fourteen or fifteen years old. I believe we should not be hasty in operating; rather cleanse the surface, using bleaching preparations to remove the pigment

material, and polishing the surface occasionally with a fine stone. By removing the superficial surface of the enamel we may produce an effect tending to give a smooth appearance to the surface. I have one patient that had a very marked condition of this character, due to imperfect calcification, and in the last four and one-half or five years the improvement, due to the occasional touching and polishing of the surface, is such that all concerned are much pleased and gratified.

Markings due to pigment matter laid down in the tissue constitute an abnormal and rare condition in the teeth of man, while in some of the lower animals it is characteristic. In man it is not a very easy matter to decide whether the pigment matter has actually infiltrated the surface or the material was laid down, but I have observed that in the latter case the places affected are favorable points for decay to attack the tooth. We have all seen the peculiar brown and white spots upon the teeth, and noticed how they dissolve under the pressure of an instrument. They cause operators considerable trouble to obliterate them.

The last variety of markings are those caused by external agencies. How many patients have told us the same old story of taking tincture of iron, and all sorts of drugs have been charged with staining and marking the enamel. We must acknowledge that some physicians still retain their liking for the old-fashioned tincture of iron, and they have good reason, but they should instruct the patient as to the deleterious action of the acid solution upon tooth-structure. I have seen peculiar cases where patients have stated that their teeth were in almost perfect condition before they used iron and Peruvian bark. The condition I saw was something new; the markings while separate covered the anterior and bicuspid teeth, some being round and others concentric and of divers forms. I am at a loss to account for the peculiar disposition of the markings, and trust some of those present may further enlighten me.

The most common markings that we find, due of course to a diseased condition, are those showing the presence of defects in the form of opaque spots near the cervical line, and on the different surfaces. They indicate that chemical change is going on, and the enamel is breaking down, allowing the entrance of micro-organisms into the dentin.

For some time I have made use of the 3 per cent. and 25 per cent. solutions of pyrozone as a preparatory means of finding the extent of the chemical action upon the enamel near the cervical border, and with satisfaction in that some of the markings due to decay became far better defined under the action of the oxygen.

### *Discussion.*

Dr. W. W. COON, Alfred, said the paper was a good one and he had not found anything in it to criticize. The suggestion as to polishing off all discolored surfaces and keeping them clean and smooth was a good one. It would preserve them from decay for a long time, if not indefinitely. He had never used hydrogen dioxid as described, but thought well of it.



Dr. F. W. Low, Buffalo, recommended a 40 per cent. solution of formaldehyd for defining and cleansing spots of decay which we do not want to fill. Of course it necessitates the application of the rubber dam, but it is very effective.

Dr. J. B. ERNSMERE, Buffalo, spoke of a patient of his, three of whose front teeth were injured by a blow from a base-ball club. The enamel on each of the teeth was stripped off completely. The teeth were not devitalized, nor has there as yet been any appearance of decay. In some cases where there were shallow cavities he ground off the enamel to the bottom of the cavities, touched the spot with formaldehyd as recommended by Dr. Low, and the decay ceased.

Dr. R. H. HOFHEINZ, Rochester, asked Dr. Madden if he attributed the faulty condition of the enamel to an acid condition of the mouth.

Dr. MADDEN. No, it marked an interruption or a stoppage in nature's work, brought about by sickness or other cause. The work of depositing the enamel is stopped during times of sickness, and not resumed where left off, but an interval is left which will as long as the tooth lasts serve as an indication of the time when the interruption occurred.

Dr. HOFHEINZ warned those who used formaldehyd of the care necessary to guard against its getting at the soft tissues of the mouth. In a case of his own, transfusion of the formaldehyd had taken place through the ligatures which tied the rubber dam, and caused serious destruction to the gums. Since then he coats his ligatures with collodion instead of waxing them.

The imperfections of development often extend very deeply, not only through the enamel but into the dentin. He had seen several cases where the tooth was completely penetrated. In such cases he had put an inlay in front and filled the back with gold, thus making a compound filling of gold, cement, and inlay. He warned against neglecting any tooth the surface of which was ground down. These teeth are usually sensitive, and the surface should be pumiced smooth as often as once a month.

Dr. Low asked if it was not possible that the tooth treated by formaldehyd and in which the latter got through the rubber dam was not a deeply grooved tooth which the rubber dam failed to make watertight. The roots of bicuspidis are frequently grooved, almost bifurcated, and he thought this might easily happen in such a case. The teeth he had used formaldehyd on mostly were anterior teeth, and he had never had any mishap, but in the future he would use collodion as recommended by Dr. Hofheinz. He never found a sensitive tooth from which the application of formaldehyd would not remove the sensitiveness. He is very careful in polishing up teeth from which he grinds the enamel. He grinds with a stone first, then following with pumice stone and tin oxid. This gives him a better polish than any other way.

Dr. MADDEN said he had not gone into details about polishing these surfaces, as he did not think it necessary. They are to be polished as a matter of course, though he had not used tin oxid.

He thought it would give a higher polish than pumice, and in the future would use it.

It is necessary to make very careful examinations of the occlusal surfaces of bicuspid and molars, for when there are cavities in the buccal surfaces they are almost sure to extend very near to these spots, should such exist in the sulci of the teeth.

The subject was passed, and the convention adjourned till next morning.

### THIRD DAY—*Morning Session.*

The following paper by Dr. A. D. HALL, Hornellsville, was read:

#### SOME PECULIAR CASES OF EXTRACTION.

I have chosen this subject because it indicates the conclusion at which I expect to arrive. It is the climax of my thought. To those of us who have been brought up amid current notions this topic seems of no importance, and you will begin to think that the best part of such a discussion will be its finish.

One of my odd experiences in extracting occurred when I was a student. On one occasion I was driving in the country ten miles from town, when a real jolly old lady called me in to her home to extract a tooth for her. (Of course I always had a pair of forceps in my pocket.) Well, when I got the tooth out (which was quite difficult for me then), I found to my dismay that she could not close her mouth. I proceeded as best I could to press the lower jaw down and backward and soon had it in position again, when instead of railing at me for putting her jaw out of joint, as I expected, she only said, "Well, I am fortunate!" and when I asked her what she meant, she said, "Why, not long ago one of my neighbors had the misfortune to dislocate her jaw, and had to be driven ten miles to town to the doctor before she could get her mouth shut; and it was in *fly-time*!"

A few years later I had a very different case, when a woman came to my office about ten o'clock at night, surrounded by four or five of her children, mostly grown-up men and women. The old lady seemed to be suffering a good deal, but could not talk so as to be understood, so all the family did the talking. They told me that mother had lockjaw; that she could not get her mouth open, and that all their efforts with scissors, knives and forks, even the screw-driver and such other things as they could find around the house, had proved unsuccessful. They believed she really had lockjaw. Upon examination I found that the only upper tooth she had left, which was a canine, was securely dovetailed between two lower teeth, where its antagonist had been extracted, and owing to the perfect fit and the extra force which the family had exerted in trying to liberate the lower jaw I found it quite a difficult task, even with a pair of bayonet forceps, which I used as a pry over her lower teeth, to separate them.

This case struck me as being so funny that I have saved the tooth, which I extracted to prevent a recurrence of the difficulty; and I also took an impression and prepared a model, which I will pass around for your inspection, for you cannot appreciate how

completely her jaws were locked together until you see the models.

These cases are peculiar because they are rare, but the kind I want to speak about more particularly are those peculiar cases where the patient can neither open nor shut the mouth with any degree of comfort, for weeks or even years at a time. I refer to the cases of partially erupted lower third molars. Only last week a young man came into my office suffering in this way, and he told me that for seven years he had not been able to close his jaws without some pain, and sometimes could scarcely masticate his food at all, on account of his lower third molars, which had been trying all that time to get into position. He said he had consulted several dentists at different times, but they all said it would be very difficult to extract those lower teeth and advised him to wait; they would use the lance or apply some lotion to the gums, but without any relief to the patient. This is only one case in hundreds of the same class. During the last two or three weeks, since I agreed to write this paper, I have had one case a week where lower third molars had caused the patients so much pain that they were really sick and scarcely able to come to the office.

Now, I know you will be saying, "You can extract any tooth; go ahead and extract it, and stop the trouble!" That is all very well, but I do not mean the cases where you can extract them,—anybody could treat such cases,—but I mean the cases where you cannot extract them because you cannot even find them, and you have just the slightest suspicion that a lower third molar is trying to make its appearance away back of the second molar, which itself is quite close to the joint of the lower jaw. You cannot see, but can just feel with the point of your long explorer that another tooth is there. You must guess the rest because the patient cannot open her mouth more than a quarter to half an inch, nor has she been able to do any better for a week or more, and everything has been tried in order to make her comfortable, and you are still at your wit's end to know what to do.

To pry the mouth open and extract the second molar may relieve the case after a long time, but it will almost ruin a good set of teeth, and it is usually where no teeth have been extracted that we have trouble. As I said in the beginning, my topic represents the conclusion at which I hope to arrive, so when a patient comes to me suffering with an unerupted lower third molar I invariably find that the upper third molar has already made so much advancement as to occupy nearly all of the space which both teeth should occupy when the jaws are in occlusion, and consequently there is no prospect of the patient's ever being comfortable while both of these teeth remain where they are. For reasons already referred to I cannot extract the lower one and save the patient, so I just administer gas and extract the upper third molar, which can usually be done without any difficulty; and the uniform expression from all is, "There, that feels better; this is the first time in a week" or "seven years," as the case may be, "that I



have closed my mouth with comfort." It cures every time, unless the inflammation has continued so long that you have pericemental abscess or necrosis of the lower jaw, and even then your patient will be relieved at once and may be allowed to rest for a short time, when you will find the lower tooth has made so much progress that you may extract it without any difficulty.

I do not think I have presented any new theory, but have only given you some experiences which have cost me a great deal of careful thought and anxiety, because the most difficult case I have ever seen was when my wife was cutting her third molars. After I had tried every known remedy and could find no other way out of the difficulty, which lasted about four years off and on, we decided to extract the lower third molars. This I finally accomplished after several trials, with and without an anesthetic, but it was altogether too serious an operation, and one which I decided was not practical,—especially when I found that the difficulty that I had hoped was gone forever soon returned on account of the upper teeth becoming elongated and pressing upon the lower gums as before. Then I decided that the proper treatment was, always to extract the upper tooth. This has never failed to effect a cure.

#### *Discussion.*

Dr. F. A. GREENE, Geneva, said he had had a case only a short time before. A young man came to him suffering with a bad abscess. The case had been diagnosed as an encysted third molar. He made an incision and packed it with gauze; the next day he explored it with a probe, and found not a tooth but necrosed bone. He then extracted the second molar and made an opening down to the bone large enough to insert his thumb. There was no third molar, but the necrosis had caused all the trouble. It soon, however, yielded to treatment. He had other similar cases, so was convinced that it was very necessary to exercise great care in diagnosis.

Dr. H. B. HUVER, Buffalo, said it was very necessary to take impressions of the mouth when thinking of extracting the second molar, so you may be sure of what is best to do. Physicians often diagnose necrosed bone when in truth there is an impacted third molar. All operations in this region should be done with all antiseptic precautions, as it is extremely liable to infection, and when this does occur it is very dangerous.

Dr. W. W. COON, Alfred, N. Y., asked whether the extraction of the upper third molar, as described in the paper, was original with the author.

Dr. HALL said it was, so far as his knowledge went. He had found it good practice to extract the third molar in all such cases when the patient has a very short jaw and there is no room for the tooth to erupt. In a real hard case it is almost impossible to get at the lower tooth to extract it, but when the upper tooth is out the lower one can erupt and be extracted later. The upper one can always be extracted easily.

On motion the subject was passed.

(To be continued.)

## MARYLAND STATE DENTAL ASSOCIATION.

THE second quarterly clinic of the Maryland State Dental Association was held in the Royal Arcanum Hall, Baltimore, January 30, 1902. The session opened at 2.30 P.M. with the following clinics:

Dr. W. A. CAPON, Philadelphia. A "porcelain jacket crown" was made for an upper right central incisor and a "porcelain inlay" for the left central for the same patient. The crown was made and finished in every detail before the members of the association in the same manner as if in a private office, thereby giving everyone an opportunity to notice the many points necessary for success.

This crown is made by fitting a platinum band (gauge No. 30) to the root or prepared tooth, the same as with gold cap work, excepting that the joint must be overlapping instead of butting edges. The lingual and labial outlines of the adjacent teeth are marked on the tube as a guide to grind those portions away to gain shape instead of cutting with scissors. The lingual side is shaped with wheel on lathe, and a piece of the same gauge platinum soldered to fit that portion by a very small amount of pure gold. After trimming and fitting to root, the labial surface is ground thin enough to burnish and fit over the tooth, after which a thin veneer is fitted and held in position by the porcelain paste, carefully dried and baked the same as other crowns. The crown is now fitted to the root and requirements noted, such as proper size, shape, and thickness, and just where body is wanted. If the surface of veneer requires grinding it should be done at this stage, so that it will be glossed again by the last heat, which should be strong and of uniform degree. After final baking the platinum portion is polished and the crown is ready for adjusting, using thin cement and very gentle tapping with a pine stick. The crown should fit easy, as there is danger of breaking the thin porcelain on the sides of the crown, or even checking the veneer itself.

The joints are lapped and made as close as possible, so that great and frequent heating will not entirely destroy the solder; excess of solder will flow over the surface of the platinum, causing porosity and destroy the porcelain adhesion, which may not be noticed at the time of operation, but will be more forcibly noted later on. The lingual surface is ground thin to give shape, so that there may be two flat surfaces to hold solder. When finished it gives the proper tooth contour.

The porcelain inlay was made by the usual way of burnishing platinum foil into the cavity by means of rubber tips and burnishers, filling the matrix with high-fusing porcelain, baking and re-burnishing the mold in the cavity, and finishing by fusing porcelain to a good gloss. The platinum is peeled from the porcelain, grooves are cut in the inlay, and it is cemented in and allowed to harden.

The rubber tips used to-day are new instruments and are a great improvement over the ordinary rubber tip pencil. The set consists of three sizes and shapes, and were designed by Dr. J. E. Duffield, of Camden, N. J. The clinician understood that The S. S. White Co. would manufacture them very soon.

Dr. GEO. E. HARDY, Baltimore. "Painless extirpation of the pulp of a lower right molar," using cocain under pressure. The pressure was applied by covering the cavity with a pellet of unvulcanized rubber and pressing it gently until the pulp was fully anesthetized, when it was removed without the patient experiencing the slightest pain.

Dr. CYRUS M. GINGRICH, Baltimore, inserted a "non-cohesive gold filling," and exhibited three patients showing some beautiful fillings of the same character.

Dr. C. E. DUCK, Baltimore, inserted a "filling of moss fibre gold," and two fillings of Archite cement.

Dr. J. H. AMMENHEUSER demonstrated the "adaptation of metal plates to a plaster cast by a shot swaging apparatus."

Dr. E. E. CRUZEN, Baltimore, demonstrated an "easy method of retaining rubber dam without the use of clamps." A small glass bead was tied on a silk ligature, the rubber dam adjusted, the silk passed between the teeth and the bead drawn close to them and tied, the bead serving to keep the rubber from sliding up and off the teeth.

Dr. G. M. SMITH, Baltimore, showed an appliance for retaining loose teeth.

Dr. L. M. PARSONS, Baltimore, demonstrated the working of the "Turner gasoline furnace" for baking porcelain.

Dr. A. C. MCCURDY, Towson, Md., showed a method of "making perfect joints to Richmond crowns without soldering," when the solder has failed to flow and close the joints. He makes an amalgam of gold foil and mercury and packs it into the joint. The piece is then placed in dry plaster of Paris and set over the Bunsen burner to heat up and drive off the mercury, after which it is burnished and polished.

Dr. L. WILSON DAVIS, Baltimore, exhibited "models of a case of regulation," with the appliances used. This was considered a difficult case. Both of the upper canines were decidedly inside of the arch, occluding inside of the lower teeth. The age of the patient was twenty-three years.

The clinician fitted bands of platinum, No. 36 gauge, to five teeth, the second bicuspid on each side, the canines which were to be drawn out, and the right central incisor. Having these bands in position on the teeth he took an impression in modeling compound; then removed the bands and put them in place in the impression, pouring the impression with plaster two parts to one of marble-dust. After separating the impression he had the model with the bands in position. A piece of German silver wire, about No. 14 gauge, was bent so as to rest hard against the lateral incisors, and being curved out from the canines was extended back to the first molars, being allowed to touch the bands on the bicuspid and the central incisor. Before soldering the bar to the bands opposite each canine a little flange was soldered to the top of the bar and holes made in these flanges without threads, through which gold screws, about No. 17 gauge, were allowed to work freely. The bar was then soldered to the bands and the



screws put in position through the flanges, and the ends of the screws were soldered to the bands on the canines.

The appliance was then adjusted in the mouth, the screws being left the length desired. Taps were then screwed on, having been made to fit a large size watch-key, and screwed up to exert as much pressure as was thought advisable in the beginning. The patient was seen every day except Sundays, and the taps screwed tighter, for three and a half weeks, when the appliance was removed, the teeth being in perfect position in the arch and no bad result whatever accruing from the forcing of them there.

The case was completed the last of November, 1901, and now the teeth are in position just as when the appliance was removed, both dentist and patient being highly pleased with the success of the operation.

Dr. L. W. FARINHOLT filled a compound cavity in a lower second molar with non-cohesive gold.

The clinic adjourned at 5 P.M. to attend a dinner given by the association in honor of their guests, the District of Columbia Dental Society.

#### *Evening Session.*

The society was called to order at 8.30 P.M. and the following paper was read by Dr. W. A. CAPON, of Philadelphia:

#### PREPARATION OF CAVITIES FOR PORCELAIN.

I have chosen this subject because I am desirous that those who have an ambition to practice this branch of dentistry should have the success that I know is possible. No matter what branch of art, science, or industry you may follow, successful issues can only be obtained by a knowledge of the rudiments pertaining thereto, and the more thorough the knowledge the greater the chances are for the culmination of what should be every honest man's desire, namely, a reputation which will inspire the respect of his co-workers and the confidence of those whom he may be destined to serve.

The old saying that "Honesty is the best policy" is truly applicable to our profession, because "Your sins will surely find you out" if honesty be not practiced to the letter. Do not think that it is in my mind to give you an essay on morals as relating to dentistry or any such theme, for it is dangerous to preach, particularly so for a dentist, therefore I shall come to the point without delay,—which is, that we all should be honest to ourselves as well as to our patients by being cautious in the extent of our practice of porcelain as a filling.

I sound a note of warning because I know this work is being attempted by many who have not the first idea of its requirements, and I know they are storing future trouble unless they at once recognize the fact that this is a special branch of dentistry, requiring very special consideration.

I frequently receive letters with plaster casts, sometimes from long distances, requesting an inlay or section of a tooth, the shade to be same as sample inclosed, etc., and I know by the tone of the

letters received in reply to my refusal that my reasons are not considered conclusive, and it is thought that if I knew a little more about it I could solve such an apparently easy matter.

It may be that my correspondent has attended one of my clinics some years ago, when the interest in this work was small and many of the important points were forgotten or the whole matter was considered of little value.

Every dentist has had a preceptor, either a college or an individual, and they have all worked to the same end,—that is, to show the student the proper methods and correct movements. With study and such directions he is equipped and after due examination he is allowed to practice and feels that he can honestly do so.

It is only in the last few years that this idea of filling teeth with porcelain has been introduced, work done properly therewith having beautiful results; how many, however, are able to attain sufficient proficiency to reach the desired results? It is not a regular college teaching, merely elementary in its nature, for it is entirely different from any other filling material. The only similarity is the preparation of cavities, and even in that similarity there is a difference sufficient to make or mar success.

Being aware that many of you have considerable knowledge of this subject, I approach it with some hesitation, knowing the difficulty in making myself properly understood, being forced to resort to a few incomplete sketches which show their insufficiency when compared with a demonstration on the natural tooth-substance.

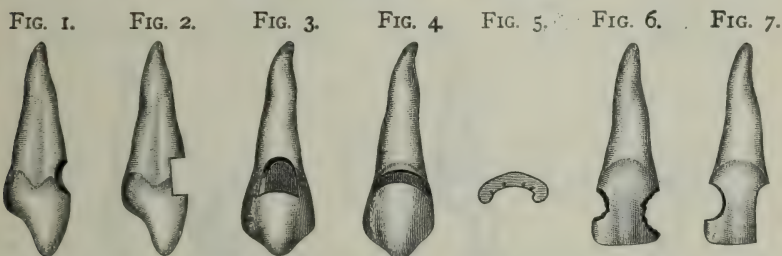
The first instructions given to a student in my laboratory are in the preparation of the simplest cavity, one for instance on the labial or buccal surface. Cut boldly, get perpendicular walls, square and true edges. You at once say, "How can this be done in sensitive teeth?" Occasionally I have extreme cases, and to accomplish my object I use an obtundent, usually cocain with pressure or cataphoresis. Trichloracetic acid and glycerin, equal parts, is sometimes successful. Ethyl chlorid spray is very effectual when properly handled and the soft tissues protected. Under the head of a simple cavity I will place abraded surfaces which have reached that point requiring attention; in such places porcelain is ideal.

For the purpose of illustration, I will take a canine the condition of which is represented in Fig. 1, with polished surface and indefinite edges, in many cases quite deep, and it is there the mistake is made in the idea that not much change is necessary. They should be cut as if decayed, and when ready for inlay should appear similar to Figs. 2 and 3.

In my estimation the most difficult labial cavity is that which extends across the whole surface of the tooth bordering on the gums and in many cases extending under the free margins as in Fig. 4. As the cavity forms the segment of a circle it is difficult to draw the matrix without changing the form. Being very slender, the ends are liable to draw together slightly in the furnace. After final fusing it requires the utmost care to strip the metal without breaking the porcelain. These difficulties surmounted, it must be placed with very soft cement to prevent breaking. Sometimes a

better fit is obtained by breaking it, sometimes it is better to make it in two sections. In such pieces of porcelain the undercuts are made as in Fig. 5. The preparation of approximal cavities in the incisors and canines does not materially differ from that intended for gold. Fig. 6 represents a central considerably decayed on those surfaces. Prepared for porcelain, they should resemble Fig. 7, with the mesial cavity clean and regular in outline. Thin enamel walls should be cut away where there is a tendency for the cement to form a line of demarkation. The distal cavity is cut to incisal edge, but in many cases the texture of the tooth may be strong enough to allow retention of that section, which is an advantage, as it places the cement line in a much better protected position with no leverage on the porcelain.

I may be open to criticism at this particular point, but if my directions are followed and regulated by a fair amount of judgment according to the circumstances, I feel that you need not fear unfavorable results, not forgetting the fact that a porcelain filling in position represents the natural strength of the tooth nearer than anything else, with the advantage of not having jarred or endangered the weak parts in obtaining these results.



Cavities in laterals and canines should be treated similarly to those in centrals.

In a former paper I mentioned a good point in regard to the making of a matrix for approximal cavities, but maybe it will be new to most of you, so I will repeat it. Such cavities usually present a larger opening labially or lingually, therefore you draw the matrix from that surface, but do not burnish the metal thoroughly to the smaller side of the cavity, merely make an outline sufficient to be a guide in placing the porcelain. (Fig. 8.) In this way the matrix can be more readily removed without changing. After the first baking the excess of metal is removed and the outlines made definite and perfect. It is this excess of matrix material that increases the difficulty, which of course after being reduced is of little hindrance.

In the case of a broken corner of an incisor, such as Fig. 9, it is preferable to trim the enamel to the shape shown in Fig. 10 instead of continuing the line direct to the cutting edge; in this way you give strength to the porcelain, as the wedge end will surely break with use, leaving an uneven edge that is unsightly and cannot be repaired. Figs. 11 and 12 show the same kind of repair by a deeper perpendicular line.



Sometimes there is a small cavity on the approximal surface that assists materially in adding to the strength of the corner by cutting the interior portion to it. (Fig. 13.) In fact, these slight corner breaks are impossible to repair without some such assistance.

A break extending across or nearly across the whole width of a tooth, as in Fig. 14, is extended evenly by shortening the tooth proper, as in Fig. 15. Enough must be cut away to allow sufficient porcelain for strength, also to give room for the ends of the pins or loop that invariably must be used, although a small cavity on each side may assist the retention of the section without other means; it is, however, much more difficult to make.

In a very badly broken and devitalized incisor (Fig. 16) the porcelain section would be held in place by means of a pin entering the canal. (Fig. 17.) Or, if the break is less, deep undercuts in the porcelain will do as well and will take less time. (Fig. 18.)

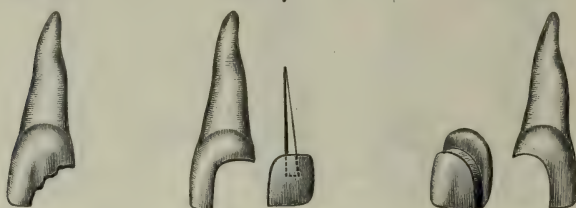
FIG. 8. FIG. 9. FIG. 10. FIG. 11. FIG. 12. FIG. 13. FIG. 14. FIG. 15.



FIG. 16.

FIG. 17.

FIG. 18.



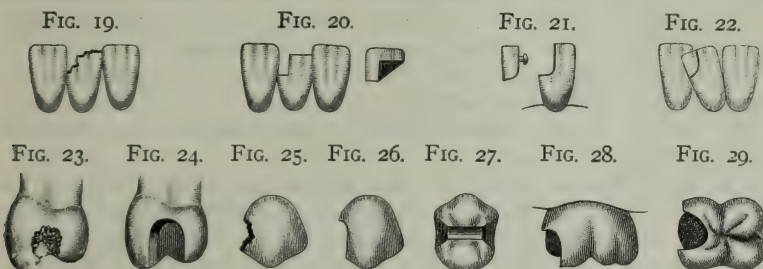
Lower incisors can be classed among the most difficult to repair with porcelain, and fortunately the demand is less, but at times such a case as Fig. 19 presents itself, which should be made as in Fig. 20. Frequently the cutting edge is decayed only slightly, leaving the enamel plates sufficiently strong for gold to be packed about a pin baked with porcelain section, as in Fig. 21, adding much to the strength of the filling.

The same means can be applied to an upper incisor under the same circumstances without showing an objectionable amount of gold. In such a case as represented by Fig. 22, where the central is more than usually exposed because of irregularity, it is excusable to doubt its durability, although I recall such a case that has had five years of indifferent use and is in excellent condition at the present time, although it has had no pin, being held by an undercut in the porcelain, showing that with care such cases are practical and reliable in the smaller teeth. It is recommended that such work be not attempted until the operator has had sufficient practice to inspire that confidence which is not only desirable, but requisite for success in small tedious operations.

In bicuspid, Fig. 23 represents a common form of decay, either

on mesial or distal surface, but unless there be unusual space or the cavity be very shallow, the form when taking the impression should resemble Fig. 24, having no overhang of tooth-structure, but straight, strong walls, for in these cases the walls must help to sustain the porcelain on account of the greater purchase on all masticating surfaces. In a cavity such as Fig. 25 I prefer cutting to the occluding surface, as shown in Fig. 26, in this manner doing away with the weak wall, which is of no advantage and is a hindrance to the placing of the porcelain section when the cavities extend completely across the grinding surface. It should be prepared similarly to Fig. 27, and the filling made in two sections, having one placed and thoroughly set before impression of remaining section is taken. I suppose such cavity or cavities can be termed "double compound," and I think the same term can be applied to the operator who successfully accomplishes such an operation.

Directions for the preparation of cavities in bicuspsids may apply to molars, although the opportunity for porcelain is limited to a



few places, such as simple buccal or mesial cavities extending to the occluding surface, or the two combined, as in Fig. 28 and Fig. 29. The demand for this work in molars is very limited, and in very few cases is it really necessary, and yet the requisites for durability are proportionately larger. Combining these facts with the difficulties in obtaining even approximal adaptations, I argue that if our reputation depended upon ultimate results this class of work would not have the position as a filling material that it has to-day, and I am very sure your humble servant would not have the honor of appearing before this meeting of the Maryland Dental Society.

One note in conclusion is that my directions are deduced from many years of experience, and with the use of platinum foil as a matrix.

#### *Discussion.*

Dr. G. MARSHALL SMITH was pleased to see that Dr. Capon had adopted the plan of making square margins in such cavities as were shown in Fig. 1. When he, Dr. Smith, first undertook porcelain fillings he did not adopt these square margins, and the consequence was his porcelain came out. In cavities like Fig. 9 the square shoulder shown in Fig. 10 must be made, or the narrow part of the porcelain filling would surely break off and repair

would be impossible. In cases like Fig. 18 that he had attempted he had failed, though he did not believe that if he had adopted the method shown by Dr. Capon, the shoulder would have broken off in mastication. He acknowledged that Figs. 22 and 27 presented difficulties that he would not expect to surmount, and he was ready to take off his hat to anyone who could make porcelain fillings to fit such cases and which would be serviceable.

Dr. W. W. EVANS, Washington, asked Dr. Capon if there was any investment that would hold the pin shown in Fig. 17 and stand the high heat necessary in fusing porcelain.

Dr. C. C. HARRIS said when he first heard Dr. Capon describe the methods with porcelain fillings the process seemed so easy and simple that he took the work up thinking that he had it fairly in hand. Naturally enough he had found much to learn; one thing was the advisability of attempting simple and easy cavities first and leaving more difficult cases until he was better acquainted with his materials. Beginners are apt to undertake difficult fillings, and this accounts for a majority of our failures. The knowledge that after the first baking the excess of platinum may be removed simplified the process somewhat.

Dr. KING asked what was the thickness of the platinum that Dr. Capon used for the matrix.

Dr. W. A. MILLS asked what kind of cement was best for holding inlays in place.

Dr. GEO. HARDY said that his experience with porcelain had taught him that it was not an art that could be learned from lectures, nor even by seeing another do it. The only way one could hope to master it in any degree was by taking hold and doing the work. Experience is the only school that will teach this art successfully. One operation, the one of building out a corner, where Dr. Capon uses what he termed a loop of wire, Dr. Hardy had done in a slightly different manner; that is, where Dr. Capon baked the ends of the wire into the porcelain and let the loop extend into the tooth, Dr. Hardy had baked the staple, as he called it, into the porcelain and let the ends extend into the tooth. Dr. Capon's way was evidently the best, as it does not weaken the porcelain by the loop of wire running through it.

Dr. CAPON said the restoration of the tooth-corner spoken of by Dr. Hardy was not described in the paper, but was made in a lecture before the college during the afternoon. He would illustrate it on the blackboard when he came to close the discussion.

Dr. A. C. BREWER said he made porcelain fillings, but used Jenkins body, and his processes and results were therefore different from Dr. Capon's. He, of course, makes his matrix of gold, which he swages up as well as he can, then takes No. 30 gold and swages it inside of the other. Now he fills this matrix with wax, and then withdraws it and invests it in ground asbestos and bakes the porcelain. In compound cavities he uses No. 40 gold, and while the matrix is filled with spunk or bibulous paper he removes all of the excess of gold except just enough to cover the sharp margins; then he takes out the spunk or bibulous paper and



burnishes and swages again; he then invests it as before and fuses without re-swaging. He makes his retention grooves as large as possible, as the more cement there is the better security is there for the filling.

Dr. G. H. CLAUDE said the kind of work Dr. Capon had described was away beyond anything he could do practicing in a town where there was no electricity. However, he had done something in the way of porcelain restorations. His first case was only about two years after he graduated. A lady lost a large gold filling almost like the case shown in Fig. 18. She had worn the filling for quite a while, but when it dropped out she was determined if possible to no longer be disfigured by the display of so much metal, and applied to Dr. Claude for something not so glaring, so he tried an experiment. Securing a Bonwill crown as near the shape, size, and color of the tooth as possible, he ground it down to the shape of the part lost, then with a fine wheel he made the hollow in the crown deeper and put it into the place with cement. On the approximal side of the tooth there was a long narrow cavity which he also filled with a piece of porcelain. These fillings lasted six years, when the large one had to be reset by a dentist in Norfolk. A few years later he saw Timme's method of burnishing gold into a cavity and burning the body over an alcohol lamp. He had used this method occasionally, with some failures and some successes. Unless the work be carefully done, the color is liable to be burned out of the body. He has made restoration of the gum with this method, and thinks it a pretty good process for one who cannot do better. Porcelain, however, as it is worked now, is the most beautiful and artistic dental work that has ever been done, and he congratulated the society upon the privilege of such a presentment as Dr. Capon had given of it.

Dr. E. E. CRUZEN did not wish to criticize in any way what Dr. Capon had presented in his paper, and thanked him for his work before the society and for what he had done for him in the past. Inlay work was comparatively new to him, and so far he had been very conservative in doing it, confining himself to the simpler work and being careful not to undertake it except where he had every assurance of success, and so far he had not had any fillings to come out. Beginners are apt to overfuse the low-fusing bodies, and even with the medium high-fusing bodies, unless special care be taken, the color is liable to be burned out, and the porcelain when subjected to too high heat is made porous. The color in low-fusing bodies is unstable under the best treatment, and after a year or two becomes lighter.

Dr. W. A. MILLS said that any porcelain can be changed to the appearance that a dead tooth has by burning a little sulfur on it. This gasses the porcelain and deadens the appearance. He often treats a tooth this way when he desires to get this appearance.

Dr. CAPON, in closing the discussion, said that many questions had been asked which covered important points in the porcelain

work. He had not gone into many of the details of the work because he felt that he was addressing men who were already somewhat familiar with it, and his paper had been of the nature of post-graduate work suited to those who had already practiced porcelain filling.

It is easy to get Dr. Jenkins' method, as practiced by Dr. Brewer, confused with the high-fusing system; the processes are, however, very different, and also the results. With low-fusing body the bottom of the matrix must be whole, while with his own system this does not matter, and therefore it is not necessary to line the matrix.

He used high-fusing porcelain, and had done so for years, and this work if properly carried out will stand every test.

As to the operation shown in Fig. 18, a pin could be used instead of the shoulder of porcelain, but experience has shown him that the plan demonstrated is the best if the porcelain be braced, as the figure shows, in the cavity.

As to investment material, he does not use any investment at all in this kind of work. He used to do so years ago, but found that it affected the quality of the porcelain. The pin is held in place by the matrix and the body, the same as the loop which Dr. Hardy spoke of. When you have a corner to replace, where there is very little retention, you make a loop of No. 24 or 26 iridium-platinum wire; then make the matrix and place the loop in it; then mix a little porcelain with gum tragacanth, pack it into the matrix around the loop, and fuse it at once in the furnace; then you can do anything you want with it. A pin is inserted in the same way. Any investment is liable to spoil the porcelain because of the moisture that is in it, and therefore he does not use it. Dr. Hardy's idea is right; in porcelain work you must learn to walk first before you undertake to run. If you will undertake only the simpler cavities first and the more difficult after you have familiarized yourself with the materials and methods, in time you will be able to overcome every difficulty.

The platinum used is one one-thousandth of an inch in thickness. Before it is used it must be annealed thoroughly. It may be wrapped around a lead pencil to get it in shape, and then placed in an electric oven, to remain say five minutes, and it will be found to be thoroughly soft.

There are many cements which are good for setting crowns; he uses Justi's "insoluble" and Ash's C. A. S. cement; for setting inlays, Harvard cement.

Shrinkage in the first bake of an inlay causes much trouble. He uses Close's body by preference; it is an old and reliable body, ground coarsely, on which account there is less shrinkage. A few pieces of a broken porcelain tooth put in with the body will lessen the shrinkage. After the first bake use any of the preparations of high-fusing body,—whatever will give you the color you want.

To get the matrix for a cavity extending under the gum, of course it is necessary to push the gum back, as it would be to prepare this same cavity for a gold or any other kind of filling.

There is a tendency among operators to over-bake porcelain fillings; this should be guarded against, as it not only takes the color out of the porcelain, but takes the life out of it and renders it porous. He spoke favorably of Brewster's bodies and enamels, as resisting the effect of over-baking. He recently put a piece the size of a dime in the electric oven, and being called away forgot it. On returning half an hour later he found that all the color had been burned out of it, but upon cutting out a segment found that the surface cut was capable of taking a high polish,—that is, it was not porous. Brewster's enamels are very good, but they shrink badly; to succeed with them only a very thin layer must be used; then the result is very pretty.

The Turner gasoline furnace he used to-day was very satisfactory in its working, and makes porcelain inlay and other porcelain work possible to anyone whether the electric current is at command or not.

The subject was passed, and Dr. Capon received a rising vote of thanks for his courtesy in reading his paper before the society.

(To be continued.)

---

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

(Continued from page 167.)

DR. GORDON WHITE, Nashville, exhibited casts and described cases of root amputation for the cure of abscess. He had hoped to have a patient present that he might perform the operation at the clinic, but could not arrange it. He exhibited models showing present condition of the gums and teeth in cases done many years ago.

In the first case in which he did this operation his patient was a lawyer, who came to him in October, 1886. The whole upper portion of the root of the upper lateral was denuded of its pericementum and the anterior plate of the alveolus was reduced to a narrow strip at the gum margin. He told the patient that the only thing he could do was to amputate the denuded portion, an operation that he himself previous to that time had never done, and, as far as he knew, one that had never been done. The patient consenting, he split the gum over the tooth and examined the root, beginning at the apex and proceeding toward the neck of the tooth until he found sound tissue. There he amputated the root with a fissure bur, and with a new finishing bur he polished the end of the root that was left. He then packed the opening with a little sterilized gauze and treated it about four times. The patient then left the city. He exhibited models of this tooth as it is to-day, showing scarcely an indication of the operation. He showed also another model of the same operation performed in May, 1891.

At the time the first operation was done there was nothing in dental literature describing this operation, and as far as he knew, it was entirely new. "In 1886," Dr. White said, "Dr. Rhein in the DENTAL COSMOS said that Dr. Farrar did this operation about a



year before I did, and in one of my visits to New York I spoke to Dr. W. H. Atkinson about it. He said that he had done the same operation frequently; but as far as I have been able to find out there was nothing in dental literature about it."

Dr. CORLEY asked Dr. White if he would leave the root if a portion of it was denuded of its pericementum clear down to the gum.

Dr. WHITE said in his first case on the distal side it was denuded clear to the gum margin; he cleaned out this pocket and treated it just as he would a case of pyorrhea, and, as he had shown them, this case was still in position.

Dr. CORLEY and Dr. W. E. Walker had performed this operation successfully in several cases and commended it.

Dr. H. H. JOHNSON said he had performed it in one case of a central incisor and afterward crowned the root, and it is doing good service still.

Dr. H. H. BEACH said in all cases of straight-rooted teeth the better plan would be, if it became necessary to amputate part of the root, to remove the tooth, cut off the diseased part, fill the canal, polish the end, and replace the tooth in its socket. It can be done more quickly, with less pain to the patient, than can this operation, and with more certainty as to the result. Every preparation should be made beforehand to have every step done antiseptically; the root should be filled with a metallic filling, and a retaining appliance should be worn for some days to keep the tooth firm in its place. He believed this to be a better operation than that described by Dr. White.

Dr. WHITE said the operation described by Dr. Beach was a good one, but in most cases he preferred the other plan. He had, however, performed that spoken of by Dr. Beach many times.

On motion, the subject was passed.

### *Afternoon Session.*

The Committee on Oral Hygiene was called, and Dr. H. H. Johnson offered a paper by Dr. J. P. CORLEY, Greensboro, Ala., which was then read, as follows:

### ORAL HYGIENE.

*Mr. President and Gentlemen of the Southern Branch of the National Dental Association:* The practice of Oral Hygiene has long been limited to the narrow confines of the oral cavity, and its most ardent devotees have done little more than insist on cleanliness of the teeth, together with their proper exercise. This of course has been in keeping with the mechanical basis upon which our science was premised, but with the advance in dental education, which guarantees to the graduate dentist of to-day a knowledge of sialogy almost equal to that of the medical profession, he is qualified to institute a broader and more thorough system of hygiene.

The great barrier which stretches its spectral arms across his path is the public's impression that the teeth are things apart, free

from the influence of environment and destined from all eternity to run a prescribed course, amenable only to operative intervention. And again, the popular impression that the dentist is in fact a *toothist* pure and simple, as though the object of his care existed as in a test tube. We have been training through the tedious years that we might bequeath to future generations more perfect dentures with approximate immunity from the need for patchwork, and yet we have not demanded or required that co-operation and assistance from our *clientèle* without which our efforts must ever result in failure.

The day when a man could afford to retain a patient who habitually and wilfully neglected his dental toilet has passed. On the other hand, the public has been slowly taught to appreciate the intelligent dentist. His people recognize in him the artistic scientist, and are usually willing to enter into the spirit of his profession. It is mainly through the mothers that we can hope for a hygienic regimen which will be truly prophylactic in its last analysis. Clinical observation as well as scientific research prove that the period of greatest susceptibility is during the time when the patient is still under the care of his guardian. This fact is both suggestive and encouraging. Habits of cleanliness and laws of health can be enforced, and when established at this early age will be more permanently maintained. Then, again, if this critical period be passed with freedom from serious decay, comparative immunity will follow.

The two great channels through which we can hope to reach this maternal head are the medical and educational professions. It is encouraging to note that some of our medical schools have regular lectures on oral hygiene. Thus the M.D. goes into practice with a greater appreciation of the importance of a prophylactic regimen, and also with some knowledge of a practical dental toilet. Some of the public and normal schools are having illustrated lectures on the subject and are beginning to enforce its technical observation. Let us use our individual and collective influence to further the work in these two directions.

After all, however, there is an opportunity which comes to each of us alike, and may be used to greater or less advantage by all: the constant teaching at the operating chair, and a demand for the courtesy due us. To do this with success we must study the individual patient as we would a book. We must know what to say and when and how to say it. Above all, we must be firm and uncompromising in our demands. The work is of so great magnitude that the efforts of a few individuals can accomplish but little. Every society,—state, sectional, and national,—should have a standing committee to push the work and all should work in harmony with the National Association committee. These committees should have a representative at every medical and educational meeting in the country.

We have had the privilege of presenting the matter to both of these professions in Alabama, and have met with nothing but encouragement from all. I say that the land is ours if we will but

rise and possess it. Let us take advantage of the great tidal wave of interest which is to sweep over our country, the advance indications of which are before us, and by a thorough preparation for the exigencies of the hour press the work of hygiene and prophylaxis.

The report of the Committee on Oral Hygiene was then read, as follows:

#### REPORT OF COMMITTEE ON ORAL HYGIENE.

*Mr. President and Gentlemen of the Southern Branch of the National Dental Association:* It is a matter of regret and chagrin on the part of the chairman, that, although he has been given two committees on hygiene, the only thing which he has to submit is a short paper from his own hands hastily scribbled while convalescing from a recent illness.

Aside from my committeemen, I have addressed some able writers requesting contributions, but notwithstanding the unprecedented activity in association circles along this line, there seems to be great hesitancy on the part of the individual dentist in contributing to the cause.

The action of the National Association in appointing a committee to champion the cause was a most wise and commendable one. The work accomplished by this committee, while it is in its incipency, is sufficient to attest the wisdom and enthusiasm of its *personnel*.

It is unfortunate that a working basis could not have been established earlier in the scholastic year; still, the way has been opened for a thorough canvass of the schools of the entire country during the coming winter. The man who denies this committee his sympathy and support, be it through ignorance or indifference, is criminal.

The number of society journals and popular papers on the subject is notably on the increase. It is evident to every thinking man that individual and associated effort was never at so great a premium, nor did it ever offer so great reward.

J. P. CORLEY,

*Chairman Committee on Hygiene.*

On motion the report was received and opened for discussion.

#### *Discussion.*

Dr. W. E. WALKER said he had taken an active part in the work of this committee in the National Dental Association, and he thanked Dr. Corley for the work he had done in the same line. The subject of oral hygiene in the public schools was receiving attention from quite a number of state societies. The committee of the National Dental Association had sent blanks out to the state societies appropriate for those to use who were making examinations of the school-children's mouths. Not very many such examinations had been made yet, but they hoped next winter to have the material for a full report as to the number of cases of caries, of irregularities, and the proportion of children who habitually used tooth-brushes.



Dr. H. W. MORGAN complimented Dr. Corley upon his enthusiasm. This subject has attracted attention from time immemorial, and he was glad to know that some good missionary work was being done among the school-children. That is the place to begin. If we are to do this work, and do it in such a manner that there will be no opportunity for unworthy men to get hold of it in such a way as to advertise themselves, it will do a great good.

It is work that will have to be done over again each year, because you do not have the same crop of children to deal with; there will be no end to it. Much can be done through the school teachers, if you can get them interested in it. Our school board, some years ago, prepared a circular letter that was sent to all of the teachers, and they were required to read it to their classes twice a year. Some of the teachers took a great deal of interest in the matter, and did a great deal of good in their schools.

He thinks dentists should make more effort to impress the necessity of greater care of the children's teeth upon their patients while they are in the chair. This is a golden opportunity, while the patients are suffering from the neglect of their own teeth, to teach them that care will preserve the teeth of the children. They will be apt to heed the advice when they realize that the pain they are suffering is the consequence of their own neglect of these important organs. That is a great sentence which old Dr. Freeman used frequently to repeat to his patients, "Clean teeth do not decay." Many of my own patients have thanked me for that saying.

Dr. CORLEY said that it was well for poor human nature that there were some bright spots along life's pathway. He was getting to the point of believing that oral hygiene is the foundation and superstructure of all dental practice. If he is ever so honored as to be the chairman of this committee again, he will work harder than he did this time, and he feels sure that he will get more than one paper. He will have more than one even if he has to write two himself. Dr. Walker, chairman of the Committee on Oral Hygiene of the National Dental Association, has furnished blanks to be sent to dentists and to the superintendents of schools with the purpose of having examinations made of the mouths of school-children. To avoid the possibility of jealousy, all of the professional dentists in each of the smaller towns should unite in the work, doing it together or alternately, or by agreement select someone to attend to it. When the examinations are made, each child is given a blank with a report on it as to the condition of the teeth. This they carry to their homes, and it serves to call the attention of their parents to the subject and post them as to the needs of their children. He did not think there was any danger of this work being a help to the quacks. The mere fact that the professional men were doing the work and were doing it unselfishly will bring the parents to appreciate the difference between the professional and unprofessional dentists. The fact that we do not have the same children year after year is an advantage for us, as we will thus have more missionaries to carry the work on in the families. Oral hygiene does not benefit the teeth alone, but the sense of

taste depends largely on the cleanliness of the mouth, while the health of the whole system may be, and often is, wrecked because of the lack of proper mastication due to imperfect teeth.

On motion the subject was passed, and the Committee on Prosthetic dentistry was called.

Dr. J. Y. CRAWFORD, chairman, reported that he had one paper to present, by Dr. H. H. JOHNSON, Macon, Ga., as follows:

#### AN IDEA IN CROWN-WORK.

The chief feature of the paper was the description of what he said should be called the J. Y. Crawford crown, as it originated with Dr. Crawford.

It is made as follows: The root is prepared by grinding it off about even with the free margin of the gum, avoiding any oval or round shape at the end and removing any bulging shape at the sides. The canals are then enlarged for the reception of platinum posts, not forgetting to ream the orifices into a countersink with a large bur. A band is carefully fitted about the circumference of the root, to which a flat top is soldered forming a cap. This cap is placed on the root, and the flat top burnished down into the countersunk orifices of the pinholes. The holes for the pins are now punched at the indicated spots; the pins are placed in position, the whole removed, and the pins soldered in place at the upper side, filling the countersunk holes about the pins flush with solder. The cap and pins united are now placed upon the root, a bite and impression being then taken, from which an articulating model is made and mounted on an articulator. The gold cap is now on the model which represents the mouth, and the pins are left projecting above the surface of the cap. Grind these off even with the top of the cap.

The tooth, which must be a vulcanite bicuspid, is now selected. Adjust this to a proper occlusion by grinding it off at the base perfectly flat, allowing it to fit flatly against the top of the gold cap. Now with a strip of thick tin foil, take a measure of the circumference of the bicuspid, and make a gold band which will be deep enough to reach the grinding edge of the palatal side. Trim the band down to a narrow strip on the buccal side, press the tooth into this side and burnish the edges to a perfect adjustment, grind or file off the base of the band flat and even to the base of the tooth, while the tooth is still inside of it. Remove the tooth and place the band, narrow edge front, on the gold cap and solder it to the latter with a minimum amount of solder. If the band fails to fill out to a proper contour on the palatal side, the deficiency may be filled in by thickening it with solder at that point. After polishing the cap and band, the crown is completed by cementing the porcelain bicuspid firmly into place in the half cup which was soldered to the root-cap. When this has been allowed to set hard out of the mouth it is ready to be cemented on to the root in the mouth, completing the work. We now have a very strong, natural-looking crown with a proper occlusion and showing a minimum amount of gold. The final result of the making is never in

doubt from beginning to end, as the porcelain tooth never goes into the fire and there is no chance of checking or other failure.

This description of the making may appear somewhat voluminous, but it should not deter any from attempting to make it, for in practice the process will be found to be not longer than the making of a Richmond crown, and it is in many ways more satisfactory.

#### REPORT OF CLINICS.

Dr. W. V-B. AMES, Chicago, described the construction of gold inlays and showed the use of his "flux" for retarding and controlling the setting of cements. He also showed his method of mixing cements.

Dr. A. R. POPE, Franklin, Tenn., exhibited a patient with a peculiar affection of the left temporo-maxillary articulation rendering mastication painful and difficult, and at times making it very painful for the patient to open the mouth. This case was examined by Dr. Sumpter, who pronounced it a slight dislocation of the left condyle, the right being normal. The inability to open the mouth was due to spasmodic muscular contraction.

Dr. W. K. SLATER, Knoxville, Tenn., exhibited a new method of attaching porcelain teeth to rubber or celluloid plates; he also exhibited a porcelain bridge so constructed upon platinum as to give great strength and take the strain off the porcelain at the inner cusps.

Dr. LLOYD S. GILBERT, Denver, Col., exhibited the Griswold system of retaining springs for removable bridges and plate attachments.

Dr. FRANK HOLLAND, Atlanta, Ga., made a contour gold filling, using cohesive gold condensed by the electro-magnetic mallet, the cavity being in the distal surface of a lower bicuspid.

Dr. A. GORDON FINNEY, of Wilkesbarre, Pa., extracted a broken-down upper right first molar, the palatal root of which was abscessed, using the "Eureka non-secret extracting fluid;" the patient experiencing no pain.

Dr. VERNON, Kansas City, Mo., demonstrated the working qualities of "Vernon's non-crystal mat gold."

Dr. CRENSHAW, Atlanta, exhibited a new matrix for gold and plastic fillings applicable to approximal surfaces of any of the teeth.

Dr. MEWBORN, Memphis, exhibited models showing a method of constructing anchor plates or removable bridges for partial dentures.

Dr. DIXON, Bolivar, Tenn., demonstrated a method of constructing a window crown so as to preserve all sound enamel. These crowns are especially applicable to front teeth.

Dr. J. E. CHASE, Ocala, Fla., described a method of making porcelain-faced crowns with a detachable facing.

Dr. GORDON WHITE exhibited models showing the results of his operations in root amputations.

The chairman of the committee exhibited a new matrix and clamp designed by Dr. L. P. LEONARD, of Chaska, Minn.



*Discussion of Clinics.*

*Dr. W. V-B. Ames's clinic.* Dr. AMES said it was a peculiarity of dental cements that they lasted much better under an inlay than when used as a filling,—as surprising a result as the lasting qualities of gutta-percha in cavities between the six anterior teeth, in which gutta-percha is a better material than cement.

In the use of the flux that he exhibited, it is better to add the flux to the liquid than to the powder.

*Dr. A. R. Polk's clinic.* Dr. CRAWFORD said that he had examined Dr. Polk's patient, and while there was a slight dislocation, he thought there was a variety of troubles; he doubted whether the trouble was attributable to the dislocation or the dislocation to the trouble that existed before the dislocation took place. He was inclined to think that there was a retained third molar; this sometimes causes difficulty in opening the mouth. Or the slight dislocation might have been caused by the premature loss of the teeth in the lower jaw; we know that under these circumstances the lower jaw inclines to become straightened, and the condyle does not move properly in the socket. The condition might possibly be cured by constructing a denture for the left side so that mastication will take place on both sides of the mouth. The muscles of the tongue in this patient showed nervous symptoms which may indicate something like paralysis. He thought the surgeon would be justified in making an incision at the glenoid fossa to see if there is an abnormal condition of the condyle.

Dr. NOEL thought it might be a rheumatic condition of the muscles of the part. We know that rheumatism arises from a diseased condition of the blood, and all this trouble might yield to a continued exhibition of potassium iodid for the cure of the rheumatic condition.

Dr. CRAWFORD thought salicylate of soda would be safer treatment than potassium iodid.

Dr. HOLLAND thought that the operation advised by Dr. Crawford, an incision at the glenoid fossa, might have serious effects on the articulation of the lower jaw.

*Dr. Crossland's clinic.* Dr. CRAWFORD complimented Dr. Crossland on the splint he had exhibited. If he were ever so unfortunate as to break his hand he would use just such a splint.

*Dr. Frank Holland's clinic.* Dr. HOLLAND said that his purpose in giving the clinic was not to teach the older practitioners, but he hoped to encourage the younger men to strive after a perfection of technique that would result in improvement in their work. If the large majority of operators would adopt the proper means and make the required effort, the results obtained by the best operators would be more frequent. A thorough study of the electric mallet would be of value to the average dentist, and would relieve him of much of the hard, tedious work with the hand mallet. In competent hands the electric mallet will save labor to the operator and be a comfort to the patient. Good work can be done by hand pressure, the hand mallet or the mechanical mallet, but human strength and endurance are not equal to the demands these instruments make on us and our patients.

*Dr. Crenshaw's clinic.* Dr. CRENSHAW said those who saw the matrix he exhibited understood its construction. The matrix, which is duplex in form, admits of contouring with gold and other materials, and can be removed from about the teeth without destroying the contour. Feeling the need in his own practice for a matrix which was reliable and easily adjusted, which would adapt closely at cervical margins, and which would not work loose under the pressure exerted upon it in filling, he had essayed to construct such an one. The matrix as it will be offered the profession will, when in place, be entirely out of the operator's way, and will reflect light into the cavity or cavities. Its construction is such that the thin steel bands girt practically three-fourths around the teeth, and the bands have a rigid tension upon them throughout their length.

Those who have read Dr. Clapp on combination fillings (in Kirk's "Text-book of Operative Dentistry") would have observed that he has devoted more time and space to the application of the matrix to a tooth than he has to the description of the filling. This is because out of the list of matrices then at Dr. Clapp's disposal there was not one he could use to advantage, and he discards the regular stock matrices and substitutes a form which must be tied in place with silk cords or gilling twine. Those who have once tied on a matrix in this way for gold filling will not soon forget it. Judging from the indorsements the Crenshaw matrix has received, it is believed it will prove of universal application and adoption.

On motion the subject of clinics was passed, and the Committee on Necrology was called on to report.

Their report stated that since the last annual meeting the following members had died: W. H. Burr, B. H. Catching, C. Sill, W. T. Arrington, W. H. Marshall, W. W. H. Thackston, H. J. McKellops, Wm. Henry Morgan.

The report closed with a few fitting words of eulogy, expressing the deep sense of sorrow which the association feels at the great loss sustained in the death of these men, all of more than usual eminence and several of them occupying the very highest place in the esteem of the profession.

Dr. J. Y. CRAWFORD moved that the report be accepted, that it be given a special memorial page in the record-book of the association, and that it be made a part of the Transactions of the National Dental Association.

Continuing, he said that while he had never been a man-worshipper, he had always been inclined to admire and respect character in a man, and these men whom we were now called to memorialize were men of the highest and most exalted character. When a member of the Congress of the United States passes away, a day is always devoted by that body to a memorial service, and it is fitting that the Southern Branch of the National Dental Association should now lay aside all other business to fittingly express its sense of bereavement at the loss of these honored fellow-members and professional associates.

Would it be sacrilegious or improper to reverently invoke their presence, to ask them to be with us in spirit and aid and uphold us in our work in this our annual meeting? The last day of this meeting is near at hand, and we do not know who of those present are here for the last time. Let us stop, then, for a moment and drop a tear of reverent sorrow for the loss of these great men who have so recently departed.

Dr. J. P. GRAY, Nashville, said he knew Dr. W. W. H. Thackston slightly as an acquaintance, but was aware of the high esteem in which he was held throughout the profession, and had assisted to make him an honorary member of the National Association of Dental Faculties. Dr. W. H. Morgan he knew well and long, and honored him as a man of large heart and true and tenderest impulses. Dr. McKellops he had known for twenty-seven years, and he was always an inspiration to him. To meet him was always a pleasure. He always had a kind greeting for a friend, and, being a man of strong convictions himself, he loved strong convictions in others. Dr. McKellops had been like a father to him, always ready with good counsel, and more than good counsel he gave to him; he owed him gratitude for substantial assistance when he was in trouble, and he should always love him for his good heart and noble, kindly disposition.

Dr. S. W. FOSTER. We may well all be profoundly impressed when we look upon this list of the names of fellow members we have recently lost. I am reminded of a piece of unwritten history of the Southern Dental Association. Three men, Dr. Morgan, Dr. Thatcher, and Dr. Edwards, got together and discussed the necessity of an association to represent the dentists of this section, and the upshot of the discussion was that Dr. Morgan wrote a letter which he proposed sending to the more eminent dentists in the South. Before sending it out, a copy was forwarded to Dr. McKellops, who was urged to go forward with the work of organizing the association. Dr. McKellops replied that he did not wish to take the initiative, as he lived north of Mason and Dixon's line, but he would be glad to do whatever was possible to make the movement successful. Dr. Morgan then took the bit in his own mouth and sent the letters out. This movement resulted in the organization of this association. I have known these men all, and have loved all of them, especially my dear old friend, Dr. Morgan.

Dr. J. S. VANN, Gadsden, Ala., said it gave him great pleasure to rise and speak a few words about these great and good men who have passed away within the past few months. Some of them he did not know, but several he knew well, and all of these he loved, especially his kind friend, Dr. W. H. Morgan. He was a very dear friend, always ready with help or counsel, and his advice was always the best. Many, many times he told him to be thorough!—that success depended on thoroughness. This was a cardinal article of his belief, and one which he practiced as well as preached.

Dr. GRAY said it seemed that there should be a history of the organization of the Southern Dental Association, and a record of its



work. He moved that the president appoint a committee to prepare such a history, so that while some of the earliest members were yet alive the facts which were in their possession should be put on record.

Dr. H. E. BEACH said that some years ago he learned that Dr. W. W. H. Thackston wrote the first call for any dental organization on the face of the earth. He was glad that the early history of the Southern Dental Association was to be prepared and put on record.

Dr. W. E. WALKER said that his mother had for some time been at work on the history of the Southern Dental Association, and had the original call sent out by Dr. Morgan at that time.

Dr. GRAY altered his motion to read as follows:

"Moved, that Drs. L. G. Noel and H. W. Morgan be appointed a committee to prepare a history of the Southern Dental Association."

The motion having been seconded,

Dr. SARRAZIN moved as an amendment that Dr. Beach and Dr. Walker be added to the committee. The amendment was accepted and the motion passed.

The convention adjourned to meet at Atlanta, Ga., February 18, 1902.

---

### LOWELL, MASS., DENTAL SOCIETY.

THE Lowell Dental Society was organized January 29, 1902. Object, good-fellowship and professional advancement. The members are enthusiastic, and the society has started out under very favorable conditions. Meetings are to be held bi-monthly except during July and August. Officers: A. W. Burnham, president; W. H. Downs, first vice-president; D. D. Snyder, second vice-president; Edwin E. Kinney, secretary; E. L. Farrington, treasurer; J. V. Pepin, librarian.

The first dinner was held at the Merrimac House on February 12th, on which occasion papers were read by Drs. E. L. Farrington and W. H. Downs.

---

### HARVARD ODONTOLOGICAL SOCIETY.

THE twenty-fourth annual meeting of the Harvard Odontological Society was observed as "ladies' night" at Young's Hotel, Boston, Mass., on Saturday evening, March 1, 1902. After the dinner there was an oration by Herbert A. Reed, D.M.D., entitled, "Some Cheerful Facts About Our Great Country," followed by an illustrated lecture by Rev. Peter MacQueen, M.A., of Boston, entitled, "Beautiful Russia, the Home of the White Czar." Music was furnished by Mrs. Jeanette Bradbury Chase and Miss Clara E. Shedd.

The officers elected for the ensuing year are as follows: Julius G. W. Werner, president; John W. Estabrooks, recording secretary; Arthur H. Stoddard, corresponding secretary; Allen S.

Burnham, treasurer; Harry W. Haley, editor. Executive committee—John W. Estabrooks, William P. Cooke, Lyman F. Bigelow.

---

## DENTAL SOCIETY ANNOUNCEMENTS.

### MISSISSIPPI BOARD OF DENTAL EXAMINERS.

THE Mississippi Board of Dental Examiners will hold its next annual session in Jackson on Tuesday, May 6, 1902.

W. R. WRIGHT, *Sec'y*,  
Jackson, Miss.

---

### PENNSYLVANIA BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, May 6-9, 1902.

For information and papers apply to Hon. Jas. W. Latta, secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP, *Sec'y*,  
Williamsport, Pa.

---

### WEST VIRGINIA BOARD OF DENTAL EXAMINERS.

THE West Virginia Board of Dental Examiners will meet at Martinsburg May 21, 22, and 23, 1902, for the examination of candidates. The examination will be in writing, and will include anatomy, physiology, chemistry, histology, bacteriology, pathology, metallurgy, dental medicine, surgery, and operative and prosthetic dentistry, together with operations in the mouth.

All applications, together with the fee (ten dollars) should be sent in ten days before the examination. All applicants are expected to furnish their own instruments and material.

J. F. BUTTS, *Sec'y*,  
Charleston, W. Va.

---

### ALABAMA BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners for the State of Alabama will meet in Tuscaloosa, Ala., on Monday before the second Tuesday in May, 1902. In addition to the regular written examination, each applicant must fill at least two teeth, approximal cavities, one with gold, the other with alloy, work to be done under immediate supervision of the board. The board to determine or pass on suitable selections of cavities. The board will try to furnish subjects, but failing to do so, applicants for license must find or bring their own subjects, also instruments and material.

Each applicant must bring a partial upper denture ready for soldering, not less than eight teeth, hard solder required, which work must also be done under the supervision of the board.

THOS. P. WHITBY, *Sec'y*.

---

### MARYLAND BOARD OF DENTAL EXAMINERS.

THE Maryland State Board of Dental Examiners will meet for the examination of candidates for certificates to practice dentistry, on Monday and Tuesday, May 5 and 6, 1902, at the dental department of the Baltimore Medical College, commencing at 9 A.M.

Application blanks and all information will be furnished by the undersigned.

F. F. DREW, *Sec'y*,  
701 N. Howard st., Baltimore.

## VIRGINIA STATE BOARD OF DENTAL EXAMINERS.

THE next meeting of the Virginia State Board of Dental Examiners will be held in Richmond, Va., on the second Tuesday in June, 1902.

R. H. WALKER, *Sec'y.*

---

## ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

THE next regular meeting of the Illinois State Board of Dental Examiners, to examine applicants for a license to practice dentistry in this state will be held in Chicago April 30, 1902, and continue four days at the College of Dentistry (University of Illinois), cor. Harrison and Honore sts. Candidates must furnish their own patients, and also come provided with the necessary instruments, rubber dam, and gold to perform practical operations, and such other work as is deemed advisable by the board.

Those desiring to take the examination should matriculate with the secretary ten days before the date of meeting. The examination fee is ten dollars.

J. G. REID, D.D.S., *Sec'y*,  
1006 Champlain B'ld'g, 126 State st., Chicago.

---

## DENTAL COMMISSIONERS OF CONNECTICUT.

THE Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford, on Wednesday, Thursday, and Friday, May 28, 29, and 30, 1902, respectively, to examine applicants for license to practice dentistry, and for the transaction of any other proper business.

The practical examination in operative and prosthetic dentistry will be held Wednesday, May 28, at 9 A.M., in Putnam Phalanx Armory, corner Haynes and Pearl streets. The written theoretic examination will be held Thursday and Friday, May 29 and 30, at the Capitol.

All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations. Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars, filed with the Recorder on or before May 21, 1902.

By direction of the Dental Commissioners.

J. TENNEY BARKER, *Recorder*,  
8 North Main st., Wallingford.

---

## MISSOURI STATE DENTAL ASSOCIATION.

THE thirty-eighth annual session of the Missouri State Dental Association will convene at Jefferson City, May 21, 22, and 23, 1902. The literary program will be held in the Legislative Hall, and the clinics, beginning at 10 A.M. the first day, will be held at the Penitentiary, where an abundance of clinical material can be had. Special railroad and hotel rates have been secured.

The following is a partial program:

*Addresses and Essays.*—1. Burton Lee Thrope, St. Louis: President's annual address. 2. Wm. Everett Griswold, New York: "The Griswold System of Removable Bridge-work." 3. Frederick Brown Moorhead, Chicago: "Alveolar Abscess, its Sequelæ and Surgical Treatment." 4. D. R. Stubblefield,



Nashville, Tenn.: "Metallurgy." 5. J. D. Patterson, Kansas City: "Etiology of Dental Disease." 6. D. F. Luckey, D.V.S., Columbia (Missouri State Board of Agriculture): "Comparative Anatomy of the Teeth." 7. J. Robert Megraw, Fayette: "Dental Prescriptions." 8. Millard Lewis Lipscomb, A.M. (Missouri State University), Columbia: "The Practical Application of Electricity in Surgery and Kindred Subjects." 9. S. C. A. Rubey, Clinton: "Some State Board Questions and the Answers They Receive." 10. James W. Hull, Kansas City: "Conservatism in Dentistry." 11. Herman Prinz, St. Louis: "Some of the Newer Dental Remedies." 12. Charles Gilbert Chaddock, M.D., St. Louis: "Neurology." 13. W. W. Flora, Carthage: "Use and Abuse of Crown- and Bridge-Work." 14. Otto J. Fruth, St. Louis: "Report of Committee on New Inventions and Appliances." 15. H. S. Vaughn, Kansas City: "Orthodontia."

*Clinics.*—M. C. Marshall, St. Louis, supervisor. 1. Edward G. Snodgrass, Keokuk: Step filling, using Watts' crystal gold. 2. Frederick Brown Moorhead, Chicago: Surgical treatment of alveolar abscess. 3. Wm. Everett Griswold, New York: The Griswold system of removable bridge-work; constructing a practical case in the mouth. 4. R. C. Brophy, Chicago: Porcelain work, baking with gasoline and gas furnaces. 5. B. Q. Stevens, Hannibal: Table clinic—"My method of root-filling with gutta-percha and wood points and taking impressions of enlarged or undeveloped root-canals." 6. A. J. Prosser, St. Louis: Methods of filling with cohesive and non-cohesive gold and tin foils. 7. F. M. Fulkerson, Sedalia: Immediate and painless pulp-extirpation in anterior teeth. 8. R. H. Mace, St. Louis: The use of gold inlays in deciduous and frail teeth. 9. Hubert P. Neepier, Canton; Edward G. Snodgrass, Keokuk: Mounting Logan crown with cap. 10. John G. Harper, St. Louis: Table clinic—"Some odds and ends." 11. F. B. Jahr, Kansas City: Preparing cavities in porcelain teeth. 12. J. Robert Megraw, Fayette: Treatment of alveolar abscess with fistulous opening, and immediate root-filling. 13. M. R. Windhorst, St. Louis: Gold fillings. 14. F. H. Achelpohl, St. Charles: The use of Teague's cavity cap disks. 15. J. H. Kennerly, St. Louis: Taking impressions of the mouth. 16. J. Denzil Bowles, Tipton; New treatment for epulis tumors, oral ulcers, etc. 17. D. O. M. LeCron, St. Louis: Porcelain inlays. 18. A. J. Prosser, St. Louis: Gold inlays, swaged and burnished. 19. W. F. A. Schultz, St. Louis: Operation for necrosis. 20. R. R. Vaughn, St. Louis: Demonstrating use of Archite cement. 21. Geo. H. Mathae, St. Louis: Extracting with nitrous oxid gas, demonstrating new universal lower forceps. 22. A. F. Strange, St. Louis: Obturator for cleft palate. 23. R. N. LeCron, St. Louis: Construction of porcelain bridge. 24. V. H. Frederick, St. Louis: Bridge-work with removable facings. 25. J. S. Letord, Kansas City: Demonstrating a new rheostat for 110-volt alternating current. 26. C. D. Lukens, St. Louis: Orthodontia. 27. F. F. Fletcher, St. Louis: "Something." 28. James W. Hull, Kansas City: Immediate and painless checking of hemorrhage. 29. Geo. H. Gibson, St. Louis: Cleansing a set of teeth. 30. Orme H. Manhard, St. Louis: A method of retaining loose teeth with a splint. 31. H. S. Vaughn, Kansas City: Demonstration of the Jackson crib system for irregularities. 32. W. L. Reed, Mexico: Articulated natural teeth to demonstrate cavity preparation. 33. Henry B. Purl, Kirksville; Black's method of step cavity preparation. 34. W. W. Flora, Carthage: Richmond crown. 35. Herman Prinz, St. Louis: Demonstrations of some of the newer dental remedies. 36. L. A. Young, St. Louis: Adjusting rubber dam and filling root-canals, demonstrating new rubber-dam holder

and aseptic broaches. 37. J. S. Letord, Kansas City: Fillings with Vernon's gold and Eoff's gold and platinum. 38. James F. Austin, St. Louis: Cavity preparation for alloy and a method of finishing alloy fillings.

GEO. W. TAINTER, JR., Jefferson City,  
C. D. LUKENS, St. Louis,  
J. C. PASQUETH, Mexico,

*Executive Committee.*

## SIXTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE thirty-fourth annual meeting of the Sixth District Dental Society of the state of New York will be held at Hotel Bennett, Binghamton, N. Y., on May 8 and 9, 1902.

FREDERIC W. MCCALL, *Sec'y.*

## KANSAS STATE DENTAL ASSOCIATION.

THE thirty-first annual meeting of the Kansas State Dental Association will be held at Hutchinson, May 7, 8, and 9, 1902. An exceptionally fine program will be presented. All members of the profession are cordially invited.

J. W. O'BRYON, *Sec'y.*

## ILLINOIS STATE DENTAL SOCIETY.

THE Illinois State Dental Society will meet in annual session at Springfield, Illinois, Tuesday, May 13, 1902, and continue three days. Every day something good! Practical papers on practical subjects; practical discussions on practical office experiences, led by practical men in our profession.

JAS. W. CORMANY, *Exec. Com.*

## WASHINGTON STATE DENTAL SOCIETY.

THE Washington State Dental Society will hold its fifteenth annual meeting at Tacoma, May 22, 23, and 24, 1902. A large attendance is expected and an exceptionally interesting program is promised. Several prominent men from outside the state will be in attendance and take part. All members of the profession are cordially invited to attend.

FRANK I. SHAW, *Sec'y.*

## SOUTH CAROLINA STATE DENTAL ASSOCIATION.

THE thirty-second annual meeting of the South Carolina State Dental Association and of the State Board of Dental Examiners will be held in Charleston, May 13, 1902. All dentists residing in the state are invited to be present. Visiting dentists from other states will be cordially welcome. This will be an excellent opportunity to attend the Exposition and visit the historic "City by the Sea," and spend a few days of pleasure with the dentists of the old Palmetto state.

J. EDWIN BOOZER, *Cor. Sec'y,*  
Columbia, S. C.

## SOUTHERN WISCONSIN DENTAL ASSOCIATION.

THE eighth annual meeting of the Southern Wisconsin Dental Association will meet at Madison, on May 14, 15, and 16, 1902. Members of the dental profession are cordially invited.

J. H. REED, *Sec'y.*

## OTHER COMING MEETINGS.

NOTICES announcing the following meetings have already appeared in the DENTAL COSMOS:

Iowa State Dental Society. Des Moines, May 6, 7, 8, and 9, 1902.

Illinois State Dental Society. Springfield, May 13, 14, 15, and 16, 1902.

New York State Dental Society. Albany, May 14 and 15, 1902.

Connecticut State Dental Association. Hartford, May 20 and 21, 1902.

New Jersey State Dental Society. Asbury Park, July 16, 17, and 18, 1902.

## DENTAL EXPOSITION IN MUNICH, BAVARIA.

At the meeting of the Centralvereines deutscher Zahnärzte it was decided to hold in Munich, in August next, an exposition of the principal features in the domain of scientific as well as practical dentistry.

The exposition is to embrace the departments of anatomy, physiology, and pathology of the teeth and their adnexa; also operative, conservative, and technical dentistry, together with the history thereof, and with an exhibit of scientific objects of all kinds related to dentistry, besides methods, improvements, teaching methods, etc., so far as they are of special interest or are not generally known. At the request of exhibitors, articles can be exhibited under closed glass covers.

Early notification of exhibits is requested, so that the catalogues may be complete. Exhibits should be sent not later than July 1st, and it is requested that together with a description of the goods, the desired space in square meters should be given, as well as special directions concerning them. The last date on which goods will be received is July 25th.

By order of Centralvereines deutscher Zahnärzte,

PROF. DR. WALKHOFF,  
Goethestrasse 41, I, München.

## NATIONAL DENTAL ASSOCIATION COMMITTEE ON ORAL HYGIENE IN PUBLIC SCHOOLS.

### AN APPEAL FOR CO-OPERATION.

*To Each and All whom it may interest:*

To invite wider attention to the important study of Oral Hygiene, hitherto much neglected, and the co-operation of those dentists who have already devoted themselves to the subject, the following resolution, adopted by the National Dental Association, August, 1901, is published:

*"Resolved,* That the president be authorized to enter into an agreement with some person or persons qualified to write a short treatise on Oral Hygiene, on the basis of paying a definite sum for services if the production should not be accepted, and a further amount if the work should be adopted



by this National Dental Association, and that       dollars be appropriated for the purpose."

The suggestion toward popularizing oral hygiene, made by the National Dental Association, has everywhere been received with favor, many state and local societies co-operating. Greater efforts in behalf of disseminating oral-hygienic knowledge in schools have lately been made. In Alabama, "where the way is open to us"; in Florida where the State Superintendent of Education is very favorably "impressed on the subject"; in Illinois, where the Odontographic Society of Chicago has sent circular letters to the boards of education in all civilized countries in cities of 100,000 or over, asking them concerning such a movement and gathering data upon the subject; in Maine, where "the subject has been discussed and a committee appointed," in Massachusetts, where "a committee of five has been appointed to investigate and report the best method of getting at the condition of children's teeth in our public schools"; in Mississippi, where "the matter is in charge of a special secretary"; in New York, where the State Society has appointed a committee of six, and its chairman, Dr. T. P. Hyatt, has already examined 500 children in Brooklyn and reported results on blanks furnished by this association; in Texas, where a committee from the Medical Society is working jointly with the committee from the State Dental Society; in Maryland, where a committee has planned for the examination of the mouths and teeth of school-children, for talks to the students of high schools on the care of the mouth and teeth, and for the aid of assistants in sterilizing instruments and filling out blanks, and the Baltimore County Medical Association (as the result of a paper on the "Preservation of the Health of the Mouth") unanimously adopted a resolution recognizing the benefits of oral hygiene, approving the efforts to give instruction to pupils of public schools on the care of the mouth and teeth, and urging co-operation of boards of health and education in providing for detailed examinations and reports; in the Seventh District Dental Society of New York, where "the committee is working to the end of having suitable matter inserted in the text-books"; in Virginia, where "committees of local societies are gathering statistics and the committee from the State Association is at work"; in Connecticut, where the communication from this committee was extensively discussed, unanimously adopted, and a committee appointed to confer with the school authorities; in the Duluth and Superior Dental Association, which appointed a committee to go into the schools and make the examinations, two dentists from each city; in the District of Columbia Dental Society, which sends word, "We will be glad to obtain statistics for any number of examination blanks you may wish to furnish"; in the Galveston Dental Society, which writes, "Send on the blanks and we will fill them out"; in the Toledo Dental Society, which had been waiting for some definite action by the National Dental Association, giving rules and suggestions so that all might work on the same line; in the Cedar Rapids Dental Society, which is willing to help if permission can be had from the school board; in Pittsburg, where Dr. Habbeger obtained permission from the school directors of that city to make examination of children attending Moorehead School, and examined 368 children. A significant fact in his report is that out of 1500 children in the school only 9 refused to be examined.

Helpful suggestions are solicited by the committee, which also asks that dentists forward copies of what the school physiologies used in their towns and cities say respecting the care of the mouth and teeth. The Reading Dental Society recently investigated the text-books used in Pennsylvania

(as will be seen by report in DENTAL COSMOS, December, 1901), and the chairman of this committee examined the physiologies on file at the Buffalo Exposition. Such teaching as this, for example (quoted from a physiology which has been translated into five different languages and of which several hundred thousand have been published), is not accepted by dentists as authoritative: "The teeth should be examined, so that, if enamel is removed and decay commenced, they may be filled with gold foil. All amalgams, pastes, and other cheap patent articles should be rejected, both for the sake of the teeth and the general health." A primer intended for the instruction of children in the schoolroom teaches that "milk is a good food, but it is better for the teeth after it has been boiled than when left uncooked"; that "our teeth will let us have all the eggs we want, but they like them best soft-boiled"; that "we may have all the fish we want, say our teeth, if we only eat what is fresh and sweet"; that "the pretty red color of the cheeks and lips of the Irish are due to their habit of eating potatoes"; that "tartar affects saliva and makes food hard to digest"; that birds eat gravel and sand "to make their food digest"; and that "a dog keeps on gnawing his bone after the meat is all gone to keep his teeth clean and strong."

RICHARD GRADY, *Chairman*, Naval Academy, Annapolis, Md.,  
 W. E. WALKER, Baronne st. and Tulane ave., New Orleans, La.,  
 I. P. WILSON, 327 N. Fourth st., Burlington, Ia.,  
 FRANK W. STIFF, 2101 Church Hill ave., Richmond, Va.,  
*Of Committee on Oral Hygiene in Public Schools.*

Approved: J. A. LIBBEY, *President.*

## ROSTER OF DENTAL SURGEONS, U. S. ARMY.

THE following list gives the name, designation, and station of all the army dental surgeons thus far appointed:

### CONTRACT EXAMINING AND SUPERVISING DENTAL SURGEONS.

John S. Marshall, San Francisco, Cal.  
 Robert T. Oliver, Manila, P. I.  
 John P. Hess, West Point, N. Y.

### CONTRACT DENTAL SURGEONS.

*Philippines.*—Emmett J. Craig, Samuel W. Hussey, Clarence E. Lauderdale, Seibert D. Boak, Franklin F. Wing, George L. Mason, Hugo C. Rietz, William H. Ware, Ralph W. Waddell, Jean C. Whinnery, Frank H. Wolven, Frank P. Stone, Douglas E. Foster, Alden Carpenter, Charles J. Long, John A. McAlister, George H. Casaday, Frank E. McDermott.

*Havana, Cuba.*—George M. Decker, Alexander P. Bacon.

*San Juan, Porto Rico.*—Hugh G. Voorhies.

*Fort Leavenworth, Kansas.*—Robert P. Upsyke.

*Fort Riley, Kansas.*—Edwin P. Tignor.

*Fort Sheridan, Ill.*—William C. Fisher.

*Fort Sam Houston, Texas.*—Ord M. Sorber.

*Fort Monroe, Va.*—William H. Chambers.

## EDITORIAL.

## THE NAVY DENTAL BILL.

THROUGH the energetic efforts of those in charge of the interests involved in the Navy Dental Bill now before Congress, a number of steps favorable to the passage of the measure have been taken. At this writing the bill is still in the hands of the Committee on Naval Affairs, and is awaiting their consideration and final action. It seems that no objection is made to the employment of dentists in connection with the naval service, the main difficulty being to establish the status of dental surgeons in that connection. It is for many reasons desirable that the status of the dental surgeon should be fixed upon the basis contemplated in the Pettus bill, viz, that the corps "shall consist of three grades, designated assistant dental surgeon, passed assistant dental surgeon, and dental surgeon; and with respect to rank, pay, and allowances, and to promotion within said dental corps, the grades named shall correspond to the grades of the medical corps designated assistant surgeon, passed assistant surgeon, and surgeon respectively."

It ought to need no argument to demonstrate the reasonableness and desirability of the foregoing classification. The present educational status, the training and fitness of the dental practitioner entitle him to the rank designated; but, apart from the intrinsic merits of the professional view of the case, the question of efficiency of service will in no small degree be determined by the attractions which the attainment of rank and the hope of promotion hold out to prospective applicants for appointment as navy dental surgeons.

That dentistry has developed to a position of professional and scientific importance, that its ministrations are factors of healthful and comfortable living, that it is inherently a department of the healing art concerned with problems which affect human life in a broad sense, are facts which have not generally permeated the minds of the great mass of people, are not common knowledge in the sense in which the public understanding of medicine is common knowledge. It is only recently that public attention in any general sense has been directed toward the importance of dentistry as a public health measure, and that governmental administrations have begun to realize the necessity of dental care for those who serve the commonwealth in the public defense. Under these conditions it is not at all surprising that a proposition to accord to dental surgeons in the government service a rank and opportunity for advancement such as is asked for in the Pettus bill should meet with some oppo-



sition from those who are not fully conversant with the equities involved. It should be the immediate concern of our dental organizations to take steps to overcome opposition of the character indicated, by taking appropriate action and forwarding to the chairman of the local committee at Washington resolutions favorable to the passage of the bill.

We have reason to believe that the Surgeon General is willing to indorse the measure, or at least a measure creating a naval dental corps upon lines analogous to the army dental corps, if indorsed by the dental profession generally.

---

### A DEFECTIVE STANDARD OF SKILL.

THE *Dental Record* (London) in its issue for March contains two interesting articles bearing upon the question of the practical training of the dentist. We regret that the limitations of our space prevent our publishing both of them in full. We, however, print in connection herewith the paper by Mr. Stanley Colyer, on a defect of the L.D.S. England examination, and some of its results. The other article is by Mr. W. L. Marthews, dealing with an analogous defect in the English dental curriculum with respect to the established method of training in mechanical dentistry, so far as it relates to the so-called apprenticeship system. The writers of both communications are demonstrators in the National Dental Hospital, and are practically engaged in the work of dental education. A perusal of these papers at once impresses the reader that they are written on the basis of experience in practical education, not by vague theorists, but by those who know whereof they speak, and it is communications of this character that always command respectful attention.

#### ON A DEFECT IN THE L.D.S. ENG. EXAMINATION, AND SOME OF ITS RESULTS.

When a matter that does not closely concern us requires reform, we take perhaps a passing interest in it, and pity the sufferers, telling them pleasantly that all will come right in the end. But when the matter encroaches upon our personal peace, we begin to think that the sooner that desirable end is reached the better it will be for everyone concerned, and we set about it under the stimulus of a personal grievance. Probably, had the point in the examination which I am about to criticize not become so marked an obstacle in my own work, I should merely have given demonstrators, in their present uphill task of teaching, my pity, but none of my help.

A demonstrator's ambition is to make the students under his care as efficient operators as his own ability will allow him. It is an ambition that always seems possible until the requirements of the examination are known to them; but when that misfortune happens, probability of failure steps in,

and the spirit of the work is lost in the desire to acquire the knowledge that will satisfy the examiners. The operative test, as everyone knows, is a gold filling, generally in an interstitial cavity in the front of the mouth. It is time-honored; so many years has it existed that I do not think any of us have ever heard of another. So far as this part of the examination is concerned the preparation of the student is simple; he has to be taught to do an interstitial gold filling well, and he is ready. Fortunately the rules of the hospital compel a student to do so many dead teeth, so many amalgams, and so forth, before the dean will "sign him up"; were this not so, it would be possible for a student to pass this part of the examination with no further knowledge of operating than the examination test. If it were said that the College of Surgeons held an examination in the operations of surgery in which the only operation given at the examination was an amputation of the forearm, we should be inclined to think it incredible; and yet it would be very little more ridiculous than the unflinching appearance of a gold filling as a test in operative dental surgery.

Anyone who has done any dental teaching, however little, knows how impossible it is to rouse any interest in the student in amalgam work; he has no belief in the necessity for the careful preparation of the cavity, doubts the efficacy of contour and seldom practices it, the veriest tyro not infrequently having an ineradicable belief that he can "slop" in,—to use his own words,—an amalgam with anybody; in a word, he has a splendid scorn for the work that is to form the bulk of his practice,—and all because that portion of his work has not been sanctified by the examiners. The worst effects on the student are seen during the second year, at the commencement of which he ceases to take any interest in plastic work, and begins to practice gold fillings assiduously. Toward the end of the year, if you suggest to him that it would be wise to do a few dead teeth, he sometimes smiles, possibly at the notion of doing such infantile work, and would tell you, were you to ask, that he considers it the work of a first-year student; yet students have been known to pass their examination with no idea how to open up teeth when treating roots. I know it will be said that it is the duty of the demonstrators to see that students are taught these points. They *are* taught, but the majority will not practice methods that they are not required to show an acquaintance with at their examination. The almost religious awe with which a gold filling is regarded is entirely due to the distinguished position the examiners have given it. The student, human as he is, is well alive to his own immediate end, and he gives, as I have said, a large amount of attention to the work that he knows will be given at the examination. He presents himself well armed; he can do the required filling easily,—far better, indeed, than he can do a simple contour amalgam in a premolar.

The decisions of the examiners are flattering; many candidates obtain full marks. Not infrequently, among the "rejected" one finds an excellent operator, and among the "passed" some of the worst; and of these worst, some have been known to obtain full marks for their operating. The result is inevitable. I do not wish to infer that the examiners come to incorrect conclusions as far as the work done on the morning of the examination is concerned; but I wish to emphasize the fact that, with the present examination, in which the operative portion only occupies three hours, and the only test given is one of gold fillings, it is outside the range of possibility to judge of a man's knowledge and skill.

It has been well said that an examiner's duty is to find out what a student knows. This is true; but it is true also that it is his duty to find out what he does not know. I humbly submit that in the latter respect this portion of the examination fails, and that it is one of the most potent of the many causes for the presence of that grotesque figure, "Chance," at the examination. I also believe that if the examiners knew personally how markedly the examination influences, and in many cases injures, the career of the student, many of the tests which are now in use would be discarded, or at least modified.

Mr. Colyer's complaint is that the test of the candidate's skill as an operator proposed by the examining board of the College of Surgeons is inadequate. He criticizes the test of skill comprised in the successful introduction of an approximal contour gold filling as being deficient, and claims inferentially at least that the skill of an operator who is to be considered a properly trained practitioner can only be tested by an examination of his ability to insert amalgam fillings, prepare, treat and fill root-canals, and perform the numerous other delicate procedures which he will of necessity be compelled to perform as a practitioner. He accounts for the acceptance of a contour approximal gold filling as the examination standard, not because of its intrinsic value as a test of the applicant's ability, but that—"The almost religious awe with which a gold filling is regarded is entirely due to the distinguished position the examiners have given it."

We are under obligation to Mr. Colyer for this succinct putting of the case, but wish he had given it a broader application than as related simply to the examining body of the Royal College of Surgeons, Eng.,—for their position with regard to "the almost religious awe with which a gold filling is regarded" is one which they do not by any means monopolize. It is, we think, one of the multitudinous manifestations of the worship of the golden calf which has permeated dentistry ever since it was an organized profession. We agree heartily with the thought expressed by Mr. Colyer, that as a test of manipulative ability the correct insertion of a gold filling is inferior to that required to correctly insert a saving filling of amalgam, other things being equal. It is needless to go into a detailed argument to show why this is true; anyone who considers at all the almost infinite variety of physical conditions which may be met with in amalgam when used as a filling material, and the thorough understanding of its many variations necessary to its skilful manipulation for the restoration of tooth-structure, must certainly admit that the training of a student to become a good gold operator is not a difficult matter if time and attention are given to the work of educating his fingers, even though



his mental capacity be only average. It requires something more than average intelligence and average skill to produce an amalgam operation which shall have the same tooth-saving qualities as gold, but it requires even more than that,—it requires a conscience which will not permit the operator to “slop in” the material, and a respect for its possibilities which will lead him to treat it with the same care as he would bestow upon his gold work. Anyone who has had opportunity to examine amalgam work from the hands of many practitioners can easily testify how infrequently it happens that the work bears evidence of scrupulous conscientious care and manipulative skill. It is but recently that amalgam has won for itself a position where it could command respect as a tooth-saver, not so much because of inherent defects in the material itself as because, first, of the bitter prejudice of those who were worshippers at the shrine of the golden goddess and who feared that the less expensive material would wage successful competition against their chosen methods and material. The prejudice resulting from the amalgam war is, in the light of experience and scientific research, being rapidly wiped out, and the value of amalgam as a tooth-saving material is being generally recognized; but some missionary work needs to be done in the propagation of a gospel of higher regard for its possibilities, more honest treatment of it in order to develop those possibilities, and a system of charges for dental operations which shall not be based in any degree upon the value of the material used for tooth-filling. Too much emphasis has been placed upon this latter point in the education of the public. When a large gold filling is inserted and a compensating charge for the operation made, it is too frequently the case that the amount of precious metal involved in the operation is brought forward either directly or impliedly in order to satisfy the patient that the fee charged is a reasonable one. Such a doctrine is not only absurd and misleading, but is destructive of the possibility of adequate compensation for services rendered upon the part of the dentist. What the patient pays for in the case of a filling operation is tooth-salvation, and the fee should be based upon that principle exclusively, regardless of the means or materials implied in accomplishing that purpose. The difference between a dental practitioner who bases his charges upon the materials used and the one who charges for services rendered is the difference between the apothecary and the physician.

We commend Mr. Colyer's article to the careful consideration of our readers, not only with respect to its local application, but for the broad principle it contains, striking at the roots of an error in

the foundations of our professional life that should be corrected if we are to occupy a commanding position among the professions.

The article by Mr. Marthews, which we cannot for lack of space print herewith, is a criticism upon the apprenticeship system still in vogue in Great Britain, requiring three years' previous training in the laboratory of a private dentist before taking up the regular systematic study of dentistry in an educational institution. We are extremely gratified to find that the experience of one practically engaged in the education of dentists under this system is adverse to that plan. He says, among other things, "My experience of students starting at the London hospitals is that their knowledge of dental mechanics is so deficient that their previous three years' training with a private dentist is, practically speaking, wasted. All they have learnt could have been taught them in six months, and this system of training is inadequate for the students' professional career. . . . They know nothing whatever of plate work, have never seen a crown made, and have only an elementary knowledge of vulcanite work. This, I feel sure, is due in a great measure to neglect on the part of the dentist to whom the pupil is articulated. In many cases he simply receives the premium and leaves the pupil to the care of his mechanical assistant, who may or may not take an interest in him. This is the grievance of not only one student, but of quite ninety-five per cent. of those joining the hospital." The author of the paper suggests that the three years' apprenticeship be abolished, and that the man wishing to enter the profession should serve two years at least in a dental college for his mechanical instruction, comprising a course which should be mapped out by thoroughly experienced men in all branches of the work.

The above suggestion can only meet with favor from those who have had experience in the education of dental students in American schools. The question is simply whether the education of dentists shall be intrusted to specialists trained in methods of dental education, or whether it shall be committed to the hands of the laboratory assistants of the dental profession in general. We have for so many years been familiar with the proposition that dental education should be conducted in institutions where the work is carried on by trained teachers, that it has been difficult for American dental educators to understand why the ancient apprenticeship system of training professional men should survive so tenaciously as it has in Great Britain. We hail with pleasure the tendency which is occasionally manifested toward its abolishment. If the apprenticeship system has any value, and in some instances we admit that it is of great value, it should be placed at the end of

the college course and not before it. We think there can be no doubt that dental education, as well as any education, should be systematically graded and arranged with reference to the abilities of the student, a thing impossible in the routine practice of a busy practitioner.

---

## BIBLIOGRAPHICAL.

---

### A PRACTICAL GUIDE TO THE ADMINISTRATION OF ANESTHETICS.

By R. J. PROBYN-WILLIAMS, M.D., Senior Anesthetist and Instructor in Anesthetics at the London Hospital, etc. London: Longmans, Green & Co.

This book was prepared for the use of students as a practical guide in the administration of anesthetics. It is not intended to take the place of larger works on the subject, but to meet the needs of the average student who desires a reliable guide in the use of these indispensable adjuncts to his practice. With this understanding of the scope of the work, we have nothing but commendation to record regarding it. His style is simple, clear and concise. All controversial matter is omitted and the directions with respect to all of the phases of anesthetic technique are so fully and clearly stated that any student of average intelligence should find no difficulty in gaining from a reading of the book a large store of useful information which will be practically available as needed. The book should be not only a trustworthy guide to students, but we believe that the information which it contains will stimulate the student to further research on this subject in the more elaborate treatises dealing broadly with the scientific aspects of the question.

ORTHODONTIA. A Text-book for the Use of Students in Dental Colleges and a Handbook for Dental Practitioners. By J. N. MACDOWELL, D.D.S., Professor of Orthodontia in the College of Dentistry, University of Illinois. Chicago: E. H. Colegrove, 1901. Price, cloth, \$4.00.

This work opens with two chapters devoted to the comparative anatomy of the teeth, followed by a chapter on the comparative function of the teeth of man. The essential feature of merit in the presentation of the subject is Dr. E. H. Angle's basis of classification, in which irregularities of the teeth are viewed as aberrations from normal occlusion, or, otherwise stated, that orthodontia is essentially a study of malocclusion of the teeth. The author has adopted the Angle system of classification in the presentation of his subject, but has modified it in some particulars to suit his own



views. With respect to this point, the author makes a statement which may be misleading. He says, "Drs. Davenport, Farrar, and Thompson undoubtedly laid the foundation for the classification of different forms of malocclusion that Dr. Angle has given to the dental profession in so able a manner; this classification of malocclusion for treatment is undoubtedly one of the greatest steps in modern orthodontia." Just what the author intends to convey by this rather ambiguous statement is not clear, but whatever foundations may have been laid by his predecessors, we think that there can be no mistake as to the fact that the fundamental position enunciated by Dr. Angle, which we have above referred to, was original with him. His classification of types of malocclusion we regard as of less importance than his fundamental proposition that orthodontia is essentially a study of malocclusion.

The chapter upon the technique of manufacturing regulating appliances follows, in which full advantage of the work of Case, Goddard, Jackson, and others, is taken.

The chapter on etiology, which consists practically of two pages of text, is meager and painfully insufficient. The balance of the work is largely a restatement of the work of various authors, notably of Case, Price, Goddard, Kingsley, Farrar, and others, with no noticeable suggestions with which the dental profession is not already familiar.

**REGIONAL ANATOMY OF THE HEAD AND NECK.** A Text-book for Students and Practitioners of Dentistry. By WILLIAM T. ECKLEY, M.D., Professor of Anatomy in the Chicago College of Physicians and Surgeons, etc., and CORINNE B. ECKLEY, M.D., Professor of Anatomy, Chicago School of Anatomy and Physiology, etc. In one octavo volume of 240 pages, with 36 engravings and 20 full-page colored plates. Cloth, \$2.50 net. Philadelphia and New York: Lea Brothers & Co., 1902.

A careful examination of this work has failed to develop any adequate reason why it should have been written. The author in his preface says, "This work has been prepared at the request of dental practitioners and students who have appreciated the need of a guide to those departments of anatomy with which the dentist is particularly concerned."

First, we question the propriety of admitting that such a partial knowledge of human anatomy is sufficient for the needs of dental students and practitioners. It is quite true that the work of the dentist necessitates an intimate and extensive knowledge of the anatomy of the head and neck, but it is equally true that he should

have a fair working knowledge of the anatomy of the entire human organism, lacking which he is unable to correctly understand physiology or those pathological processes affecting the entire organism and the oral tissues in particular, which it falls within his province to treat. With the many practical treatises on general anatomy, any one of which contains practically all of the information embodied in the work under consideration, it would seem that a special work of this character were superfluous. The author has drawn the bulk of his matter and illustrations from standard sources, and has added little that is original or of exceptional value.

The arrangement of the work is peculiar, not to say extraordinary. The opening chapter is descriptive of the trifacial nerve, then follow chapters upon the following subjects in the order named: "Muscles of Mastication," "Roof of the Mouth," "The Mouth," "The Intra-Mural Sinuses and Nasal Fossæ," "The Emissary System of Veins," "Cutaneous Structures of the Face," "Facial Nerve," "Boundaries and Triangles of the Neck," "Bloodvessels of the Head and Neck," "Cervical Nerves and Muscles," "Brachial Plexus," "Surgical Regions of the Neck," "Muscles of the Neck," "Deep Cervical Structures," "The Sympathetic Nervous System," and finally "Osteology—Bony Regions." It will be seen at once that the arrangement of subjects lacks co-ordination and system, a most important quality in any text-book intended for the instruction of students. Repetitions *in extenso* of descriptions of anatomical features are multiplied throughout the work. A separate chapter is given to a description of the roof of the mouth, followed by another chapter descriptive of the mouth. There would seem to be no good reason why in describing the mouth a description of its roof should not have been included in the same chapter. Some of the descriptions are ludicrous; for example, "The mouth communicates directly with the pharynx through the isthmus of the fauces; with the external world through the buccal orifice; with the nose through the anterior palatine canal." Now we take it that the author is describing the mouth with all of its tissues normally in place, and when he speaks of the *isthmus* of the fauces, we are at a loss to understand what he means. An isthmus is a narrow strip of territory connecting two larger territories, while that irregularly defined anatomical feature called the fauces, is a space, therefore an isthmus in a space lacks descriptive exactitude. Again, the mouth connects with the nose through the anterior palatine canal only when we are considering the bony framework of the mouth divested of its soft tissues. Normally, there is no such connection.

Numerous other examples of lack of exactness in anatomical

description may be noted throughout the work. If it is to have pronounced value as a book for students, it should be subjected to thorough revision and rearrangement.

The illustrations, mostly taken from standard works, are excellent, as are also the typography and press-work and the general mechanical execution of the book, which is fully up to the well-known high standard of the publishers.

OUTLINES OF ANATOMY. A Guide to the Methodical Study of the Human Body in the Dissecting-room. By EDMUND W. HOLMES, A.B., M.D. Second Edition. Lancaster, Pa.: The New Era Printing Co., 1902.

This little work is a commendable effort to systematize the practical study of anatomy from the cadaver, and is essentially a dissector's manual with copious notes and directions for the guidance of the student. The plan proposed contemplates the division of the work so that the ground may be covered in twenty-eight days, each day's work being planned with reference to the ability of the student and the necessities of the case. It is the embodiment of the author's many years of experience as a successful teacher of practical anatomy, and we doubt not the work will continue to fill a wide sphere of usefulness in the future as it has in the past.

#### BOOKS RECEIVED.

Manual of Chemistry. A Guide to Lectures and Laboratory Work for Beginners in Chemistry; a Text-book specially adapted for Students of Medicine, Pharmacy, and Dentistry. By W. Simon, Ph.D., M.D. Philadelphia and New York: Lea Brothers and Co., 1901.

(An extended notice of this important work will appear in our next issue.)

Comptes rendus du IIIe Congrès Dentaire International. Tome I.—Assemblées Générales. [Volume I of Transactions of the Third International Dental Congress. Published by E. Sauvez and Ed. Papot with the collaboration of the Committee on Publication. Paris: Office of *l'Odontologie*, 1901.]

Proceedings of the International Dental Federation and the International Commission of Education. Philadelphia: The S. S. White Dental Manufacturing Co., 1902.

Transactions of the Academy of Stomatology. Philadelphia: J. B. Lippincott Co., 1901.



## OBITUARY.

---

DR. HENRY BLISS NOBLE.

DR. HENRY BLISS NOBLE, a prominent and highly esteemed practitioner of Washington, D. C., died suddenly from heart disease, while riding in a street-car on the morning of March 5, 1902.

Born May 20, 1832, in Blandford, Mass., Dr. Noble began the study of dentistry with his brother, Dr. Lester Noble, March 2, 1857, and after graduating at the Baltimore College of Dental Surgery (March 3, 1859), immediately entered upon the practice of dentistry in Washington, D. C., continuing in active practice until the date of his decease. He was a member of the District of Columbia Dental Society, having been twice elected its president, and a member of the District of Columbia Board of Dental Examiners from the date of its organization until his death. He was also a member of the National Dental Association. He was special lecturer at the Baltimore College of Dental Surgery, also at the Dental Department of Columbia University.

In 1864 Dr. Noble was married to Miss Henrietta Clitch, of Washington, D. C. Three daughters survive him, Miss Irene Noble, Mrs. Claggett, of Linden, Md., and Mrs. Marshall, of Pittsburg, Pa. Dr. Noble's wife died several years ago. A son, who became a practicing dentist, also died several years ago.

Dr. Noble was very successful in dental practice, being regarded as a skillful operator in all branches of dentistry and especially so in the correction of dental irregularities. He was devoted to his profession, always enthusiastic and energetic in his efforts to promote its advancement. He was actively interested in the work of his local dental society, rarely missed a meeting, and greatly enjoyed discussing the various subjects presented. Notwithstanding his age he was always young in his devotion to his calling, and considered no sacrifice of time and labor too great for it. He was very loyal to his friends, was beloved by them and generally respected as a citizen; faithful in his devotion to his church, and benevolent and kindly, his attitude was one of malice toward none and charity for all.

Faithful, honorable, and upright in all of his vital relations, his death causes a loss which will be severely felt by the dental profession and by the community in which his active life was spent.

---

DR. ALBERT DOUD.

DR. ALBERT DOUD died at his home, in Fort Scott, Kansas, February 7, 1902, after a lingering illness due to Bright's disease with its complications of heart and gastric disorders.

Born in Peru, Ind., April 27, 1842, he lived with his parents on a farm until the outbreak of the civil war, when he enlisted in Company K, 134th Regiment Indiana Volunteers. After faithfully serving his country as a soldier he was honorably discharged, and thereupon took up the study of dentistry as a means of livelihood. After completing his dental studies with Dr. Gilbert, of Peru, Ind., he located in 1868, at Olathe, Kan., where he entered upon

the practice of his profession. In that city he was married in 1870 to Miss Nanette Whitcombe.

In December, 1879, he moved to Fort Scott, Kansas, where he continued in practice until the time of his decease. His career in Fort Scott was both successful and honorable. He quickly gained the respect of the citizens of the community in which he lived, and for the past eight consecutive years was a member of the board of education and rendered conscientious service in that capacity gratuitously. He was universally respected and beloved, both as a citizen and as a dental practitioner. He was one of the founders of the Kansas City Dental College, and was the second president of the Kansas State Dental Association, in 1880. His long and honorable career was terminated by a lingering illness which gradually increased in severity until the end, but throughout the closing period of his career he bore his long suffering with great fortitude, and never flagged in his professional interests nor failed in appreciation of the kindly attentions of his friends and family.

He is survived by his wife and four daughters, with a host of friends, to whom he has left the memory of a well-spent life filled with devotion to his profession and to those with whom he was associated.

---

### DR. HENRY A. ROBINSON.

DR. HENRY A. ROBINSON died of gastric disorder, January 24, 1902, at Foxcroft, Maine, in which town he was born, March 6, 1840.

He studied dentistry with Dr. Levitt, of Foxcroft, in 1861, and began practicing in Foxcroft and its vicinity in the spring of 1862. He graduated from the Philadelphia Dental College in 1867.

He was married November 27, 1860, to Miss Adriana M. Stacey, of Foxcroft, who with a son and daughter survives him. He was intensely interested in his profession, putting his best effort into every case, and was a frequent contributor to dental journals. In addition to his dental practice, he carried on with considerable success a practice in the removal of facial blemishes.

He was a member of the Maine Dental Society and of the Maine Academy of Medicine and Science.

Being much interested in fruit culture, he became a member of the Maine State Pomological Society and was a frequent contributor to fruit journals. He was a Mason, being a member of St. John's Commandery, Bangor.

---

### DR. HEBER B. BARBER.

DR. HEBER B. BARBER died at Colorado Springs, Colorado, February 5, 1902, after an illness of eight months, from pulmonary tuberculosis.

Dr. Barber was born at Naperville, Illinois, January 18, 1869. He began the study of dentistry in 1885 with Dr. C. P. Dorn, of Naperville, and after graduating at the Chicago College of Dental Surgery in 1889, entered upon practice in his native town.

He was a member of the Northern Illinois Dental Society, and was unmarried.

## PERISCOPE.

**Naphthalin in the Manufacture of Celluloid.**—According to *Zahntechnische Reform* naphthalin is being substituted for camphor in the manufacture of celluloid.

**Sterilizing the Mouth-mirror.**—Sodium peroxid is an immediate and perfect sterilizer, applicable to almost anything, and especially to the mouth-mirror and other things which cannot be boiled.—*Items of Interest.*

**Vulcanizing on Plaster Models.**—A model, upon which rubber is to be vulcanized should be as deep as it is wide, or the expansion of the plaster will be unequal, the model will alter in shape, and a badly fitting case will be the result.—*Exchange.*

**To Avoid Repolishing an Entire Gold Piece after Repairing.**—*Zahnkunst* (quoted in *Archiv für Zahnheilkunde*) advises the following procedure in cases where repairs have to be made: The plate after being painted with a solution of borax, which is allowed to dry, is invested and soldered. After the soldering the plate is boiled in a weak solution of sulfuric acid. By this method, it is claimed, only the soldered part will have to be repolished.

**Criterion of the Value of Professional Services.**—A man may sometimes do in an hour what at another time, owing to physical disability, he might not be able to do in an hour and a half, or even two hours. One way in which this may be overcome is by Dr. Jack's system of charging by what he considers a fair hour's service, which may sometimes require one hour and a half of time; and this brings us back to the point of the professional man being, after all, the only judge of the value of his own services.—S. G. PERRY.

**For Foul Breath.—**

R—Saccharinæ,  
Sodii bicarbonatis, āā. gr. xv;  
Acidi salicylici, ʒj;  
Alcoholis, ʒvjss. Misce.

Sig.—A few drops in a tumblerful of water.

—*Exchange.*

**One of the Oldest Gold Fillings on Record.**—In the *DENTAL COSMOS* for March, 1881, we find the following interesting item: "I saw a case to-day which, I think, will interest the readers of the *DENTAL COSMOS*, and which will be a hard nut to crack for those persons who have asserted that gold is the worst material with which to save the teeth. In the mouth of a 'fine old English gentleman,' I saw a gold filling in a superior molar put in by Dr. Cortwright, in London, fifty-seven years ago, and which is still saving the tooth and is likely to do so if the gentleman should live fifty years longer.—N. W. WILLIAMS, D.D.S."

**Why does Gelatin act as a Hemostatic?**—Zibell (*Münchener med. Woch.*) analyzed four specimens of gelatin and found that the most constant constituent was calcium, the average amount present being 0.6 per cent. In 100 c.c. of a 5 per cent. solution this would correspond to 0.03 gm. of calcium.—a not inconsiderable dose, particularly when it is considered that in this form it is very soluble and therefore very absorbable. The action of calcium salts in hastening coagulation is well known, and, in the absence of more definite knowledge, it seems highly probable that the gelatin owes its hemostatic properties, when given subcutaneously, to the calcium that it contains.—*Medical Times and Hospital Gazette.*



**Mouth-wash.—**

Oil of cinnamon, gr. iv;  
 Oil of cloves, gr. iv;  
 Thymic acid, gr. iv;  
 Saccharin, gr. iv;  
 Oil of peppermint, gr. xxij;  
 Tincture of rhatany, gr. xxxvij;  
 Alcohol, 90°, ℥iij. Mix.

Sig.—One tablespoonful in a glass of water.

—*Zahntechnische Reform.*

**Castor Oil.**—Many remedies have been used for the relief of neuralgia and neuralgic pains, but it is only within the past year that the administration of large doses of castor oil have been found efficacious for the relief and control of nerve pain. The best method of using it is to give it in capsules of one dram, giving four capsules before breakfast, or giving daily half an ounce to one ounce in all for from one to three weeks. At first it was found that it acted more or less violently on the bowels, but after three or four days they did not seem to be disturbed, and the neuralgic pains began to disappear. The dose may be larger than I have mentioned in more severe cases, but usually one ounce a day will be found sufficient.—A. W. HARLAN, in *Dental Review*.

**"Dental Cosmos" Report of the Third International Dental Congress, Paris, 1900.**—The report of the closing session of the Third International Dental Congress appears in the October, 1901, issue of the DENTAL COSMOS, and with that issue the publication by that journal of the complete record of the transactions of the Congress comes to an end. The publication of the report was begun in October, 1900, and since then twenty or more pages have been devoted to it in each issue [in all, 540 pages of Congress matter appeared in the DENTAL COSMOS.—ED.] until the issue of October, 1901, in which the report of the final meeting appears. It is to be remarked that the DENTAL COSMOS is the only journal that has been in a position to publish such an excellent and complete report.—*Deutsche Zahnärztliche Wochenschrift*.

**Spinal Anesthesia.**—Operations have been performed in a series of forty cases after the injection of tropacocain and eucaïn A, by W. Kapfstein (*Wiener klin. Rundschau*). He finds that in the majority of cases complete anesthesia is produced from the feet upward to the navel or higher, but that with some patients strong idiosyncrasies exist, manifesting themselves in headache, vomiting, subsequent severe pain at the site of operation and even dangerous collapse. Tropacocain alters cardiac and respiratory action much less than eucaïn, and the former is said to be much the safer in old people; it also has the further advantage that it causes no fever and less intense headache. There is absolutely no way of telling in advance how the injection will agree with a patient. It is not necessary,—indeed it is even not advisable,—to let patients fast before the operation, since they react less severely with a full stomach.—*Medical News*.

**"At what stage in the process of dental caries should we begin to operate?"** I suppose the answer would be, almost uniformly, As soon as we are certain that the carious processes are in progress. And the answer is sound; but how often are we aware of the early stages of caries on the approximal surfaces of teeth, more especially the approximal surfaces of bicuspid and molars? I think I have shown clearly enough in former papers that the earlier stages of the carious processes are slow compared with the later ones, and that these processes go on for a long time, slowly penetrating the dentin, and even producing structural changes in the pulp before

there is any breaking down of the external surface of the enamel perceptible to the touch. Should we permit these grave changes to take place and refrain from operating because there is no actual 'hole' in the tooth evident to gross touch or vision?"—J. LEON WILLIAMS.

**Reasons why the Rubber Dam should Always be Applied.**—The rubber dam should, with but few exceptions, be applied for all dental operations, as the advantages of operating with the help of this device are numerous and important. First of all, with the dam in position the field of operation can be examined with much facility, and the conditions of the affected tooth can be quickly and accurately ascertained,—a thing that is not possible if the tooth is constantly bathed in the oral fluids. When cotton or napkins only are made use of to prevent the contact of this fluid with the tooth, the napkins have to be often changed if the particular area is to be kept perfectly dry, and in so doing the tooth again becomes wet, and the mind of the operator is diverted thereby from the study of the case. Secondly, if dressings of escharotic agents have to be applied, the danger of injury to the soft tissues is avoided. Thirdly, the rubber dam is indispensable for preserving the operating field in an aseptic condition, a desideratum of capital importance in all operations in which the pulp or pericementum is involved.

**Two Cases of Boric Acid Poisoning.**—J. F. Rinehart (*Therapeutic Gazette*) reports two cases of poisoning with boric acid.

The symptoms of poisoning with this drug, according to H. C. Wood, are nausea, incessant vomiting, hiccough, erythematous eruption, fall of temperature, and collapse, the mind remaining clear. Two cases are also reported by Dr. R. Hogner, in which washing out the dilated stomach with a two and one-half per cent. solution of boric acid was followed in each instance by erythematous eruption, headache, great general distress and weakness, disturbance of respiration, involuntary discharges, ecchymoses on the skin, and death. Feré (*La Semaine Médicale*) speaks of a group of symptoms which he calls "borism," that follow the administration of boric acid. Loss of appetite, sensations of heat at the epigastrium, vomiting, skin eruptions, cachexia, swelling of the eyelids, face, or extremities, accompanied by albuminuria, are the symptoms that he has observed.

Rinehart concludes his article by stating that boric acid as a preservative of food should be prohibited by law, as the poisonous effects of any quantity sufficient to preserve food appear to have been proved.

**Remarks on Infantile Scurvy.**—J. McCaw (*Brit. Med. Journ.*, Nov. 2, 1901) says that in most of these cases the diagnosis is not hard to make, but where the classical symptoms are wanting or only one is present it may be safe to give some definite answer if asked for a diagnosis, and refers to a case which was brought to him; the child had been fed upon condensed milk and patent cereals for ten months. The baby had vomited blood, and there was a slight diarrhea in which there was altered blood. There was complete absence of other symptoms. Orange juice, 1 dram every two hours; small quantities of whey and cream at varying intervals, with a teaspoonful of beef-juce every four hours comprised the treatment. At the end of one week the whole condition was changed and the child soon recovered completely. Fowler's solution was given during the rest of the treatment.—*Medical News*.

[The classical symptoms of infantile scurvy are: anemia, tenderness of the lower extremities, subperiosteal hemorrhage, the presence of colored spots resembling bruises about the limbs and chest, swelling and sponginess of the gums, and a tendency to hemorrhage. The use of orange juice is especially indicated in cases like the one above described, as lemon juice is likely to increase the gastric irritability.—Ed.]

**Has This Idea Ever Occurred to You Before?**—At a meeting of the American Dental Convention, held in August, 1857, a member, Dr. Leech, residence not given, made the following observation: If you take a piece of steel and make a slight mark across it with a file, you take from its strength more than you would if you should cut down the whole instrument to that size, for the reason that in applying a bending force to it, the whole effect of the force is expended over the point cut by the file, whereas with a uniform reduction of surface the bending force is distributed over the entire length of the piece of steel. Hence it is important that every instrument should have as polished and smooth a surface as possible, and that the angle should not be too abruptly turned; an angle turned with a perfect corner is not so strong as one that has a slight curve. In forming steel into instruments, as true a taper should be carried back to the cutting point into the socket or handle as possible, so that the strain will become gradual all along to the point. If a shoulder is cut down to get a small size the spring is closed at that point and a strain will wrench it off.

**Surgical Asepsis and Antisepsis.**—With the view of determining the value of antiseptics in surgical work, and to what extent asepsis of the operative site and wound could be obtained, Gangitano (*La Riforma Médica*, October 7, 1901) made a series of experiments, with the following findings: (1) The skin cannot be made absolutely sterile, as the deeper strata remain septic, despite all aseptic and antiseptic measures. (2) A pack of soft soap or a one per cent. solution of formalin applied the day before operation renders the superficial skin sterile in 30 per cent. of all cases. Bichlorid produces sterility but once in ten times. (3) Sutures become infected in their passage through the deeper layers of the cutaneous tissue, as shown by cultures from sutures passed through skin which is superficially sterile. (4) The path of a suture may be sterilized by passing the needle which carries the thread through a flame immediately before the stitch is taken. A fine needle should be used, and introduced rapidly; a coarse needle, slowly introduced, produces injury to the tissues. A fresh needle and suture for each stitch are essential to the success of this method. (5) Cultures from wet dressings show presence of bacteria which live only in moist surroundings; a dry dressing is to be preferred.—*Medical News*.

**About Mummifying Pastes.**—One of the principal arguments against the practice of pulp-mummification is that it tends to careless work, and in many cases this is no doubt true, but the painstaking, conservative operator has little cause for alarm in such a charge. It is in the abuse of this method and in the careless selection of cases that the danger lies. It frequently happens that one application of a devitalizing paste is not sufficient. Very often it would not be wise or practicable to make a second application. In such cases it is my practice to seal in a portion of the following,—a formula of Dr. Söderberg's: Thymol, dried alum, and glycerol, equal parts, with sufficient zinc oxid to make a stiff paste. Then dismiss the patient for a time. Almost without exception the cases come back in a condition to be thoroughly prepared and filled with less of discomfort to the patient and of annoyance to the operator than by continued poking with a nerve-broach.—H. J. BURKHART, in *College Forum*.

[Since the introduction of mummifying pastes many formulas have been suggested, almost all containing tannic acid or agents rich in tannic acid, and lately formol and its derivatives are being commended for this purpose, inasmuch as these agents combine the tannifying and antiseptic properties which mummifying agents should possess. Paraform in combination with glycerin should give good results in this direction, as this agent is a tannifier and at the same time a strong antiseptic.—Ed.]



**On Getting the Natural Color Effects in Artificial Teeth.**—In a very interesting paper on "Facial and Dental Harmony," by Dr. Lawrence A. Baker, published in the March number of the *International Dental Journal*, the following important statement appears: "One of the troubles with stock teeth for partial work is that it is almost impossible to get the color. The general color may be good, but to get some of the gradations that we find in nature is, I think, almost impossible. If one, however, is expert with the use of stains, his work will be much more satisfactory in appearance. We can imitate the teeth that have a mottled color. Then we sometimes find them with spots of a lighter shade than the general color. I think, however, that the most pleasing work in staining is to reproduce the tobacco stains that we find on the teeth of inveterate smokers. It is almost impossible to get a natural effect in partial work in one of these mouths unless we resort to the staining, for the artificial teeth will be so conspicuous that the eye will detect them at once. Now, by copying the tobacco stains on the remaining natural teeth the artificiality will escape unnoticed. I am, of course, referring only to those cases where the teeth are exposed to view. I myself do not consider that it is really necessary to be so particular as to staining the posterior teeth unless they show under certain conditions."

**Proper Application of "Extension for Prevention."**—When you are familiar with all that the microscope has to teach concerning the processes of caries on the approximal surfaces of teeth, you will fully realize the soundness of the principle of "extension for prevention" (as Dr. Black denominates it),—that is to say, extension of the margins of a cavity beyond the points of contact for preventing recurrence of decay. I do not say that it is always expedient to fully carry out this principle, but I do say that every dentist should be in full possession of the principle underlying this method of operating; and that knowledge can only be gained by study over the microscope. When we are aware of all that the microscope has revealed as to what takes place in the dentin and pulp of a tooth in caries in very many cases where softening of the tooth-bone as perceptible to the touch has not penetrated half the thickness of the dentin, we shall understand why special treatment other than the mere stopping of the tooth is often needed. We shall understand why decay is not always arrested by the process of stopping, and why unexposed pulps sometimes die beneath fillings. These are matters upon which the microscope has thrown a flood of light, and they are matters which cannot be neglected if one wishes to keep within reach of the present possibilities of our professional work.—J. LEON WILLIAMS.

**Reflex Value of Work with the Microscope.**—There is nothing, I believe, quite equal to work over the microscope for sharpening one's critical faculties as brought to bear upon almost every department of our professional labors. The degree of the perfection of our work depends upon two prime conditions; these are, the acuteness of our perception as to what is really needed in the adaptation of means to ends, and the ability to put into execution the ideal formed in the mind. Work with the microscope is certain to very greatly enlarge and improve the first of these conditions; and when the critical faculty is keen and alert, when the ideal of an enlarged vision becomes fixed on a high plane, the fingers will slowly respond to this ideal almost unconsciously. Take an extracted tooth and prepare a cavity in it. Fill the cavity with gold and finish the plug in your usual manner. Now examine your work with a magnifying power of from twenty-five to fifty diameters. You will be impressed, as you never have been before, with the merely relative nature of the perfection of your work. You will see numberless grooves and crevices where the micro-organisms causing decay may possibly find lodgment and thus begin anew their work of destruction. The knowledge thus gained will, as I have said, almost involuntarily work itself out in the finger-tips, and your operations will reach a higher level of perfection.—J. LEON WILLIAMS.

**Infantile Pathology at the Period of Deciduous Dentition.**—In a paper on "The Deciduous Dentition as a Factor in the Health of the Child," published in the *Lancet*, Dr. W. H. Dolamore makes the following statement: "There are still diverse opinions as to the infantile diseases occurring during dentition,—as to whether they are merely coincident phenomena due to the irritation of teething, or whether they themselves are the existing cause of delayed and painful dentition, the diseases interfering with what should be a painless physiological process."

[In some cases infantile diseases are the cause of retarded dentition, for, as is well known, disturbed nutrition will retard the development of an organism in proportion to the extent of the interference with the nutritional process. In other cases, however, the constitutional disorders are due to a constant irritation of the highly sensitive pulps of the not fully developed deciduous teeth. Hence it is easy to comprehend the reasons for the prevalence of several opinions on this question and the impossibility of definitely stating whether the diseases from which the infant may be a sufferer at the time of dentition are caused by difficult eruption or *vice versa*. Experience has, however, shown that in a great majority of cases pathological dentition is the predisposing cause, while in other cases it is the direct cause, of the serious general phenomena with which the dentist who has had an opportunity to treat infants, or the pediatric, is so well acquainted.—ED.]

**Mutilation of Teeth.**—One kind of mutilation, frequently encountered upon the African coast, and on the west coast of New Guinea, consists in breaking off part of the incisors by means of a knife and a piece of wood. It is performed between the ages of twenty and twenty-five. The custom of extracting both central incisors is met with in both hemispheres. According to Zarate, the Peruvians have done this from time immemorial as a mark of slavery set upon conquered tribes. In Africa it is observed on the Congo, and among the Hottentots. Mutilation by filing has its especial center in the Malay Archipelago. Among the Mohammedans it is a religious act performed with great solemnity at the age of puberty, the style and manner of the filing depending upon the family and caste. The operation is accomplished by an expert, called the "tukang pangar," or filer, who uses a chisel, two files, a saw, and a pair of pincers, rubbed with arsenic and lemon-juice. Among certain tribes on the Senegal the upper temporary incisors of all girls are extracted, producing a projection of the lower jaw, so that the under lip overlaps the upper. In Indo-China and Japan the young women color the teeth at marriage with black lacquer. This process requires much time and money, hence is confined to the well-to-do classes. Livingstone noted that among the Kaffirs a child whose upper teeth erupt before the lower is regarded as a monster and is killed. On the Upper Nile the blacks have their upper teeth extracted through fear of slavery, thus injuring their market value. Abbé Peritat says that there exists in some tribes among the Eskimos the custom of dividing the upper teeth crosswise. This is founded on a local tradition, and the reason given is that it is to prevent the human chin from resembling that of the dog.—*Exchange*.

---

## HINTS, QUERIES, AND COMMENTS.

---

**A Query: The Tongue-sucking Habit.**—We have received the following query which we submit to our readers, hoping that suggestions may be received which will prove valuable to others as well as to those interested in this annoying case:

"I write to ask if you can suggest any remedy in a case I have for which it

seems very difficult to do anything. It is that of a little girl about five years old, who has a habit of sucking her tongue, even while she is asleep,—perhaps even more during sleep than when she is awake. Her mother has tried all kinds of means to break her of the habit, but says that it seems almost impossible to break the habit to which the child is so addicted. She was weaned when she was two years old, and has been sucking her tongue ever since. The mother says she has tried making her chew gum or keep a stick in her mouth, but nothing hitherto has seemed to do any good. I would be very glad indeed if you can suggest any remedy."

**The "Worm" Theory of Caries among Chinese Dentists.**—The following interesting paragraphs from a letter by Dr. Paul T. Carrington, of Bangkok, Siam, show that the very ancient "worm" theory of caries of the teeth as yet prevails among some of the Chinese dentists:

"The Chinese and Siamese believe in the worm theory as regards the teeth. They believe that an insect works upon the gums and teeth, but know very little about it.

"The Chinese woman referred to above has exhausted the native belief in this line, as she proposes to cure the gums and teeth by removing the worms. This woman was no doubt a fraud. She carried with her a small box of medicines, a long chop-stick, and a long silver probe. She probed the gums, and on the end of the probe would exhibit one or two dead maggots. That these were obtained from the gums thus probed was too absurd for reasonable belief. I asked her where she kept all her insects, and she replied that if I went to Shanghai I could learn the trick. Notwithstanding her evident fraud, her practice did much to confirm the native belief in the worm theory as to the cause of disturbances of the gums and teeth."

---

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

---

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

---

**Cryer** (M. H.) Studies of the internal anatomy of the face. Philadelphia, 1901, S. S. White Dental Manufacturing Co.

**Dental** (The) **Summary**. Edited by L. P. Bethel. Monthly. v. 22, 1902. 8°. Toledo. Continuation of The Ohio Dental Journal.

**Deutsche zahnärztliche Zeitung**. Hrsg. von P. Reissenbach. Semi-monthly. v. 1, 1901. 4°. München.

**Eckley** (W. T.) Regional anatomy of

the head and neck, for students and practitioners of dentistry. Philadelphia and N. Y., 1902, Lea Brothers & Co., 230 pp., 20 pl.

**Haslebacher** (A.) \*Experimentelle Beobachtungen über die Nachwirkungen bei der Bromäthyl- und Chloräthylnarkose. Bern, 1901, C. Sturzenegger, 38 pp. 12°.

**Rubbrecht** (O.) L'enseignement de la chirurgie dentaire dans les universités belges. Bruges, 1901. 12°.

**Aiston** (R.) Peridental atrophy. [Discussion.] Dental Rev., Chicago, 1902, xvi, 141-149.—**Angle** (E. H.) Méthode du professeur Angle pour la regularisa-

tion et la rétention des dents et pour le traitement des fractures des mâchoires. Progrès dent., Par., 1902. xxix, 12-20.—**Antonelli** (A.) La sinusite maxillaire



- et ses complications oculaires et orbitaires. *Odontologie, Par.*, 1902, 2. s., xiv, 5-19.—**Arkövy**. Report on dental education. *Internat. Dent. J.*, Phila., 1902, xxiii, 125-131.—**Bajardi** (D.) Contributo allo studio clinico e anatomico della macroglossia muscolare. *Arch. per le sc. med.*, Torino, 1901, xxv, 445-458, 1 pl.—**Baker** (L. W.) Facial and dental harmony. *Internat. Dent. J.*, Phila., 1902, xxiii, 69-80, 6 pl. [Discussion], 114-122.—**Barton** (T. T.) The need of original research. *Dental Rec.*, Lond., 1902, xxii, 54-60.—**Beacock** (D. V.) Vaccination a prime factor in the destruction of children's teeth. *Dental Summary*, Toledo, 1902, xxii, 70-76.—*Also*: Dominion Dent. J., Toronto, 1902, xiv, 13-18.—**Beckwith** (Thomas W.) [1856-1902.] (Obituary.) *Dental Rev.*, Chicago, 1902, xvi, 176.—**Bentley** (C. E.) Lesions peculiar to primary dentition. *Ibid.* 119-123.—**Berger** (P.) Kyste dermoïde du plancher buccal extirpé par voie buccale. *Bull. et mém. Soc. de chir. de Par.*, 1901, n.s., xxvii, 1168-1188.—**von Beust**. Filling approximal cavities, involving the occlusal surfaces, with tin and gold. *Items Interest*, N. Y., 1902, xxiv, 83-85.—**Bild** (A.) Die Entwicklungsgeschichte des Zahnsystems bei *Sus domesticus* und das Verhältnis der Lippenfurchenanlage zur Zahnleiste. *Anat. Anz.*, Jena, 1902, xx, 401-410.—**Birch** (J. C.) Irregularities of the teeth. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 24-28.—**Blake** (J. A.) Carcinoma of the tongue. *Ann. Surg.*, Phila., 1902, xxxv, 270.—**Bockart** (M.) Ueber die Aetiologie und prophylaxe der merkuriiellen Stomatitis und Proktitis. *Monatsh. f. prakt. Dermat.*, Hamb., 1902, xxxiv, 113-121.—**Braun** (H.) Ueber Mischnarkosen und deren rationelle Verwendung. *Verhandl. d. deutsch. Gesellsch. f. Chir.*, Berl., 1901, xxx, pt. ii, 136-170.—**Brophy** (R. C.) Art in dentistry. *Dental Rev.*, Chicago, 1902, xvi, 113-119. [Discussion], 138-141.—**Cantalupo** (R.) Ueber die durch die allgemeine Aethylchloridnarkose verursachten feineren Veränderungen der nervösen Centren. *Wein. med. Wchnschr.*, 1901, li, 2150; 2210; 2260; 2304; 2359; 2397; 2443; 1902, lii, 24; 81; 134.—**Capdepont**. Un cas de pseudo-éruption précoce (folliculite explosive). *Rev. de Stomatol.*, Par., 1902, ix, 23-31.—**Capon** (F. J.) Porcelain as an art in crown-work. *Dental Cosmos*, Phila., 1902, xlv, 106-115. [Discussion], 135-150.—Lectures on crown and bridge-work. *Dominion Dent. J.*, Toronto, 1902, xiv, 1-6.—**Carroll** (N. G.) Professional honesty and decision of character in the practice of dentistry. *Internat. Dent. J.*, Phila., 1902, xxiii, 91.—**Cave** (D.) The business side of dentistry. *Pacific Dent. Gaz.*, San Fran., 1902, x, 871-876. [1-6].—**Chompret**. Irrégularité dans le nombre des dents. *Rev. de Stomatol.*, Par., 1902, ix, 31-40.—**Christensen** (C.) Ein rationeller Artikulator. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 54-69.—**Clark** (H.) & **H. van der Linde**. Concerning the chemistry of tooth discoloration. *Dominion Dent. J.*, Toronto, 1902, xiv, 50-61.—**Constant** (T.-E.) Les mouvements du maxillaire inférieur. *Progrès dent.*, Par., 1902, xxix, 1-12.—**Corley** (J. P.) Inflammatory phenomena due to an unerupted third molar. *Dental Cosmos*, Phila., 1902, xlv, 156-158.—**Cundell** (J.) Dental disease an etiological factor in affections of the eye. *Dental Reg.*, Cincin., 1902, lvi, 23-25.—**Dashwood** (P. T.) Anchor plates. *Dental Headlight*, Nashville, 1902, xxiii, 1-3.—**Davenport** (W. S.) Redressement des dents sans extraction. *Rev. de Stomatol.*, Par., 1902, ix, 6.—**v. Eiselsberg**. Zur Technik der Uranoplastik. *Verhandl. d. deutsch. Gesellsch. f. Chir.*, Berl., 1901, xxx, pt. 399-419. [Discussion], pt. i, 160.—**Essig** (Charles J.) [1841-1901.] In memoriam. *Items Interest*, N. Y., 1902, xxiv, 154-157, port.—**Farmer** (F. M.) Restoration of facial contour. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 40.—**Fédération dentaire internationale**. *Deutsche Monatschr. f. Zahn.*, Leipzig, 1902, xx, 18-24.—**Filipino** dentistry. *Dental Brief*, Phila., 1902, vii, 73-77.—**Finger** (E.) La syphilis de la bouche et ses relations avec la médecine dentaire. *Odontologie, Par.*, 1901, 2. s., xiii, 685-692.—**Finlan** (W. P.) Odontalgia. *Dental J.*, Ann Arbor, 1902, xi, 10-13.—**Fiori** (P.) Nota clinico istologica sopra una varietà sarcoma del massellare inferiore. *Morgagni*, Milano, 1901, xliii, 823-831.—**Gaudry** (A.) Sur la similitude des dents de l'homme et de quelques animaux. *Anthropologie, Par.*, 1901, xii, 93; 513.—**Gavello** (G.) A proposito di uno strumento per l'operazione radicale delle sinusiti mascellari croniche col processo di Caldwell-Luc. *Arch. ital. di otol.* [etc.], 1901-2, xii, 337-340.—**Glavche** (E. S.) [Formes cliniques de l'angine mercurielle. Un cas d'affection buccale d'origine probablement hydrargyrique simulant l'herpes recidivant de la bouche. *Extr. 195.*] *Russk. arch. patol.* *Klin. med. i bakteriöl.*, S.-Peterb., 1901, xii, 147-156.—**Glogau** (E. A.) Ueber Kronen, Brücken und Zahn-schienen. *J. f. Zahn.*, Berl., 1902, xvii, No. 2.—**Gombault**. Sur un cas de langue noire pileuse. *Normandie méd.*, Rouen, 1902, xvii, 33-38.—**Goslee** (H. J.) The shell or telescope crown. *Items Interest*, N. Y., 1902, xxiv, 89-97.—**Grayston** (W. C.) On science in dentistry and a few experiments in gold filling. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 49-61.—**Griswold** (W. E.) A system of retaining springs for partial plates and removable bridges. *Items Interest*, N. Y., 1902, xxiv, 98-105. [Discussion], 118-120.—**Gulikers** (E.) Contribution au traitement de la sinusite maxillaire chronique. *Ann. Soc. méd.-chir. de Liège*, 1901, xl, 442-444.—**Haderup** (V.) International dental stenography and stenophony (dental-steno-nomenclature). *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 19-24.—**Hajek** (M.) Ueber die Radicaloperationen und ihre Indication bei chronischen Empyem der Kieferhöhle. *Wien. klin. Rundschau*, 1902, xvi, 61-64.—**Ham-**

- let** (S.) The dental profession as viewed by a layman. *Items Interest*, N. Y., 1902, xxiv, 105-112. [Discussion], 138-140.—**Hawkins** (F. F.) Moisture and weak tooth structure. *Ibid.*: 113-116.—**Hawley** (C. A.) The cohesion of gold. *Dental Brief*, Phila., 1902, vii, 61-68.—**Heckert** (T. B.) Is dentistry a liberal profession? *Items Interest*, N. Y., 1902, xxiv, 86-88.—**Herbst jun.** Foramina palatina superiora. *Deutsche Monatschr. f. Zahnh.* Leipz., 1902, xx, i.—**Hermann.** Ein Fall von syphilitischen Primäraffect an der Wangen-schleimhaut eines sieben-jährigen Mädchens. *Wien. zahnärztl. Monatschr.*, 1902, iv, 9-16.—**Hess** (R. J.) A preliminary note on the prevention of nausea and vomiting following ether anæsthesia. *Med. Rec.*, N. Y., 1902, lxi, 295.—**Hilton** (Jennie K.) The first permanent molar. *Dental J.*, Ann Arbor, 1902, xi, 1-5.—**Hoff** (N. S.) A study in bleaching teeth. *Dental Cosmos*, Phila., 1902, xlv, 101-106.—The four years' course. *Dental J.*, Ann Arbor, 1902, xi, 16-18.—**Hopkins** (S. A.) Science as a teacher of prophylaxis. *Internat. Dent. J.*, Phila., 1902, xxiii, 80-91. [Discussion], 104-114.—**Israel** (P.) Sulla malattia di Fede, o produzione sottolinguale. *Pediatria*, Napoli, 1901, ix, 492-497.—**Jeannin** (C.) Eruption dentaire précoce chez un prématuré: accidents infectieux consécutifs. *Bull. Soc. d'obst. de Par.*, 1901, iv, 375-378.—**Johnson** (H. H.) Fracture of the jaw; a report of two cases. *Dental Cosmos*, Phila., 1902, xlv, 166.—**Krause** (F.) Siebenundzwanzig Exstirpationen des Ganglion Gasser (intracraniale Trigemini-resectionen) und ihre Ergebnisse. *Verhandl. d. deutsch. Gesellsch. f. Chir.*, Berl., 1901, xxx, pt. i, 33-51.—**Krönlein.** Total Oberkieferresection und Inhalationsnarkose. *Ibid.*: pt. ii, 195-209.—**Kulagin** (A. M.) [Flask for producing anæsthesia by drops.] *Vrach*, St. Petersburg., 1901, xxii, 1287.—**Landgraf** (L.) Ueber die Herstellung vollkommen artikulirender Goldkronen. *Wien. Zahnärztl. Monatschr.*, 1902, iv, 1-5.—**Landsberger** (R.) Die Zukunft der Zahnheilkunde. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 1-9.—**Laval** (E.) L'hyper-trophie des amygdales. *Bull. gén. de thérap.* [etc.], Par., 1902, cxliii, 53-61.—**Lebedinsky & C. Lée.** Contribution à l'étude de la Stomatite ulcéro-membraneuse. *Rev. odont.*, Par., 1902, 2-11.—**Ledoux & Duhaïn.** Sarcome ostéoïde du maxillaire inférieur chez une malade opérée de résection de l'articulation temporo-maxillaire pour arthrite; ablation par résection de l'os; guérison. *J. d. sc. méd. de Lille*, 1902, i, 101-105.—**Lefebvre.** Épithélioma de la mâchoire inférieure; résection. *J. d. sc. méd. de Lille*, 1902, i, 70-72.—**Levinger.** Beitrag zur Diagnose der tertiären Syphilis des Pharynx. *Deutsche med. Wchnschr.*, Leipz. u. Berl., 1902, xxviii, 95.—**Lipschitz** (W.) Zur Narkosenstatistik des Central-Vereins Deutscher Zahnärzte. *Deutsche Monatschr. f. Zahnh.*, Leipz., 1902, xx, 25-27.—**Lukács** (H.) A trigeminus-facialis reflexekről. [The reflexes of the . . .] *Orvosi hetil.*, Budapest, 1901, xlv, 825.—**Maduro** (M. L.) General anæsthesia and its administration in throat surgery. *N. York M. J.*, 1902, lxxv, 313.—**Mamlok** (H. J.) Eine abnehmbare Porzellankrone. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 50-54.—**Manley** (T. H.) Phlegmon and fistula of the lower jaw, consecutive to eruption of the wisdom teeth; fracture of the bone or fractures of the teeth and infection after extraction. *Am. Med.*, Phila., 1902, iii, 230-233.—**Maubert & Degorce.** Sarcome de la région sous-maxillaire. *Bull. et mém. Soc. anat. de Par.*, 1901, lxxvi, 556.—**Mayer** (E.) Affections of the mouth and throat associated with the fusiform bacillus and spirillum of Vincent. *Am. J. M. Sc.*, Phila., 1902, n. s., cxxiii, 187-193.—**Meadors** (J. T.) The use of noncohesive gold in proximal cavities of bicusps and molars, and how to use it. *Dental Headlight*, Nashville, 1902, xxiii, 4-8.—Considerations of conditions of the interproximal space. *Dental Cosmos*, Phila., 1902, xlv, 163-166.—**Mendel** (J.) Sur la phase parapulpaire de la carie dentaire. *Odontologie*, Par., 1901, 2. s., xiii, 667-679.—**Moore** (C. S.) Dental obtundents. *Dental Brief*, Phila., 1902, vii, 68-73. [Discussion], 78-80.—**Mores-tin** (H.) Deux cas de rétrécissement du pharynx. *Bull. de laryngol.*, otol. et rhinol., Par., 1901, iv, 335-346.—**Moser** (W.) Protozoa in gangrenous stomatitis. *Med. Rec.*, N. Y., 1902, lxi, 170.—**Moyer** (S.) The enamel of the central incisors. *Dental Cosmos*, Phila., 1902, xlv, 183-191.—Also: *Dominion Dent. J.*, Toronto, 1902, xiv, 6-12.—**Navy** (The) Dental Bill. [Edit.] *Dental Cosmos*, Phila., 1902, xlv, 194.—**Noel** (L. G.) On the management of the permanent superior incisors and bicusps. *Ibid.*: 158-163.—**Orloff** (L. V.) [Fibromata and sarcomata of the lips.] *Vestnik Khir.*, Mosk., 1901, ii, 353-358.—**Ormsby** (L. H.) Brief notes on cleft palate, with reference to limitations of operative and mechanical procedure. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 29-37.—**Papillard** (L.) Le somnoforme. *Rev. odont.*, Par., 1902, 17-21.—**Parmen-tier** (M.) Généralités sur les abcès pharyngiens; observation d'un cas de periamygdalite postérieur. *Progrès méd. belge*, Brux., 1901, iii, 129-131.—Bactériologie pathologique du pharynx. *Ibid.*: 145-147.—**Patterson** (Callender) [1820-1901] Obituary. *Dental Cosmos*, Phila., 1902, xlv, 199.—**Peck** (A. H.) Treatment of the pulp. *Dental Rev.*, Chicago, 1902, xvi, 123-130.—**Pettit** (E.) A method of occlusion of artificial teeth. *Ibid.*: 103-113. [Discussion], 134-138.—**Porter** (C. A.) Six cases of operation for cleft palate. *Boston M. & S. J.*, 1902, cxlvi, 136-138. [Discussion], 145-147.—**Rachford** (B. K.) Hare-lip. *Arch. Pediat.*, N. Y., 1902, xix, 100-107.—**Raymond** (G. A.) The treatment of congenital cleft palate by mechanical appliances. *Boston M. & S. J.*, 1902, cxlvi, 138-140. [Discussion], 145-147.—**Reily**



- (C.) A staphylorrhaphy suture-passer. Tr. Am. Orthop. Ass., Phila., 1901, xiv, 327-334.—**Reitter** (C.) Empyema antri Highmori und Peritonitis acuta; ein weiterer Beitrag zur Kenntniss des gleichzeitigen Vorkommens dieser beiden Erkrankungen. Monatschr. f. Ohrenh., 1902, xxxvi, 12-16.—**Robin** (P.) Instrumentarium und conische Porzellankegel zur Herstellung von Porzellan-Einlagen. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 70-75.—**Elements de théraputique pathogénique de la carie dentaire et insensibilization non dévitalisante de la dentine.** Rev. de Stomatol., Par., 1902, ix, 9-23.—**Römer.** Ueber Pulpapolyphen der Zähne. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 9-16, 2 pl.—**Róna** (S.) Szétesett gummat utánzó lymphangioma cavernosum linguae multiplex. [Cleft gumma simulating . . .] Orvosi hetil, Budapest, 1902, xlvii, 15.—**Rothbart** (J.) A Highmor-barlang hydropsának és empyemájának kezeléséről 4 eset kapcsán. [Dropsy of the antrum of Highmore and the treatment of empyema after 4 cases.] Magy. orv. lapja, Budapest, 1902, ii, 23-25.—**Ruggles** (S. D.) Hæmophilia. Dental Reg., Cincin., 1902, lvi, 27-38.—**Schenk** (F.) Ueber Einfluss von Metallen auf die Vermehrung von Mikroorganismen in der Gelatine. J. f. Zahnh., Berl., 1902, xvii, Nos. 1; 2.—**Scheuer** (A.) Vereinfachte Darstellung von Füllungen aus Jenkins Porcellan-Enamel. Wien. zahnärztl. Monatschr., 1902, iv, 5-9.—**Sfrei** (P.) Der Kopf des Menschen in anatomischer, histologischer u. physiologischer Hinsicht mit besonderer Berücksichtigung des Mundes und der Zähne. Zahnkunst, Bresl., 1901, v, Nos. 48-50: 1892, vi, Nos. 1-4.—**Sledge** (A.) Exfoliation of the alveolar process. Dental Headlight, Nashville, 1902, xxiii, 3.—**Smith** (A. H.) Dentine. Dental Rec., Lond., 1902, xxii, 49.—**Spencer** (S. P.) Jurisprudence. Dental Rev., Chicago, 1902, xvi, 91-100.—**Steiner** (J.) Ueber das Empfindungsvermögen der Zähne des Menschen. Centralbl. f. Physiol., Leipz. u. Wien., 1901-2, xv, 585-587.—**Szántó** (A.) A foggyökérhártya gyuladása és annak kezelése. [Peridontitis and its treatment.] Magy. orv. lapja, Budapest, 1902, ii, No. 1, 10; 27.—**Taft** (J.) Diagnosis in dental practice. Dental Reg., Cincin., 1902, lvi, 8-23.—**Tashjian** (H. H.) Dentistry in oriental countries. Dental J., Ann Arbor, 1902, xi, 13-15.—**Taylor** (W. J.) Conservation of the deciduous teeth. Pacific Dent. Gaz., San Fran., 1902, x, 876-887. [6-17].—**Thiesing.** Die Anästhesie des Dentins. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 2-5.—**Walkhoff.** Der augenblickliche Stand der Kenntniss und der Behandlung des sensiblen Dentins. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 6-18.—**Walkhoff** (O.) Beitrag zur Dentinanästhesie durch Kohlensäure. Cor.-Bl. f. Zahnärzte, Berlin, 1902, xxxi, 17-23.—**Watson** (M. T.) Some remarks on extracting from an orthodontist's point of view. Dental Reg., Cincin., 1902, lvi, 1-8.—**Weiser.** Studien und Beiträge zur Technik der Mundchirurgie. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 28-50.—**Weisse** (F. D.) International anatomical dental nomenclature, with symbols to be used in formulæ. Dental Cosmos, Phila., 1902, xlv, 115-118.—**Weybright** (W. H.) Alveolar abscess. Dental J., Ann Arbor, 1902, xi, 5-7.—**Williams** (J. L.) The use and value of the microscope in dentistry. J. Brit. Dent. Ass., Lond., 1902, xxiii, 1-19.—**Wohlgemuth** (H.) Eine neue Chloroform-Sauerstoffnarkose. Verhandl. d. deutsch. Gesellch. f. Chir., Berl., 1901, xxx, pt. ii, 483-507.—**Wright** (C. M.) Septic gingival catarrh-disease of the gum borders and sockets of the teeth. Dental Cosmos, Phila., 1902, xlv, 119-125.

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING FEBRUARY, 1902.

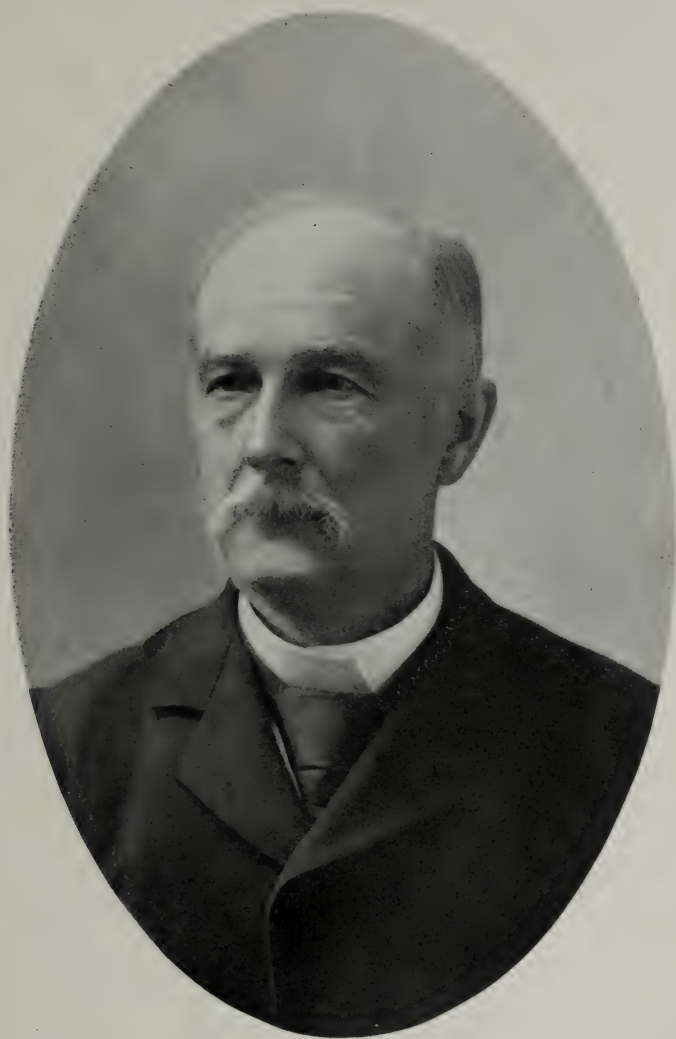
- Feb.* 4.—No. 692,281, to WILLIAM HARE. Dental mouth prop and mirror.  
 " "—No. 692,294, to HERMAN J. JAEGER. Dental lamp.  
 " "—No. 692,582, to NEWTON T. YAGER. Dental instrument.  
 " "—No. 692,708, to CORWIN T. PRICE. Tooth-brush and powder cabinet.  
 " "—No. 692,713, to BERNARD RUBINSON. Dental mandrel.  
 " "—No. 692,752, to CLAY G. WOODMANSEE. Blowpipe torch.  
 " 11.—No. 693,140, to WM. E. KNIGHT. Mouth mirror.  
 " "—No. 693,162, to A. W. SCHRAMM & E. B. WILFORD. Hot-air syringe.  
 " "—No. 693,349, to MORDECAI H. FLETCHER. Dentifrice.  
 " "—No. 693,350, to MORDECAI H. FLETCHER. Package for tooth powder or like preparation.  
 " 25.—No. 693,844, to EMIL NAGY. Artificial tooth-crown and process of making same.  
 " "—No. 694,021, to JAMES A. MEAD. Holder for dental devices.  
 " "—No. 35,766, to FRANK E. CASE. Design for dental instrument cabinet.







*R. Arthur*



*W. C. MacCall*





# THE DENTAL COSMOS.

---

VOL. XLIV.

PHILADELPHIA, MAY, 1902.

No. 5.

---

## ORIGINAL COMMUNICATIONS.

### THE PRESENCE OF BACTERIAL PLAQUES ON THE SURFACE OF THE TEETH, AND THEIR SIGNIFICANCE.

BY W. D. MILLER, D.D.S., M.D., BERLIN, GERMANY.

**I**N reporting upon my earlier experiments on caries of the teeth, I repeatedly called attention (as will be seen by the following quotations) to the fact that the enamel cuticle in the early stages of caries forms a matrix for immense numbers of bacteria, and that the thickening of this tissue is chiefly due to growths of bacteria in or upon it: "In the last stages of decay (of the enamel cuticle) we see only masses of bacteria, cocci, rods, and threads, which are held together by the remnants of the membrane." "After being stained, sections of enamel in an early stage of caries clearly show that the membrane . . . is thickened and invaded by masses of bacteria." "The membrane in this condition affords a matrix for bacteria as well as for minute particles of food, and thereby accelerates the process of decay."

Fig. 1 is reproduced from the second German edition of my "Micro-organisms of the Human Mouth." Figs. 2 and 3 are from the American edition.

From the above citations I think it will be seen that the presence of masses of bacteria, adhering to the surface of the enamel as well as to that of the dentin, and the probability of their intensifying the carious process at the point of decay, were recognized in my earlier writings. In this connection it may be of interest to the reader to refer to page 306 of the *Independent Practitioner* for 1883, where, in an article on dental caries, I refer to the film, and give a crude drawing of it. "A specimen of this kind, examined under the microscope, usually shows on the outer border a zone consisting of indistinguishable masses of fungi, from which project numerous threads of *Leptothrix buccalis*." (*Loc. cit.*) The fact that acids might penetrate through the whole

thickness of the enamel without producing any visible external defect was also noted. (See Fig. 4, likewise reproduced from "Micro-organisms of the Human Mouth," p. 158.)

This question, however, received an entirely new impulse through a paper read by Dr. J. Leon Williams before the British Dental Association and printed in the DENTAL COSMOS for July, 1898. The paper is familiar to every reader of the COSMOS and to every progressive dentist, and I need refer at this time only to the general conclusions drawn by Williams himself from his observation, *i. e.*, that all softening of enamel is due to the action of acids, and chiefly or wholly to the acids excreted by bacteria *in situ*.

Others, in commenting upon his communication, have, it seems to me, gone rather farther than Williams himself, and the view seems now to be rather prevalent that the bacteria coating the

FIG. 1.



Enamel cuticle permeated by bacteria. (1100 : 1.)

surface of the enamel cover or invest themselves with a gelatinous substance, underneath which they produce their acids directly in contact with the enamel; and that only acids produced beneath those films and protected from dissipation in the saliva by the films are responsible for the beginning of caries. Acids distributed in the saliva have no influence in causing caries.

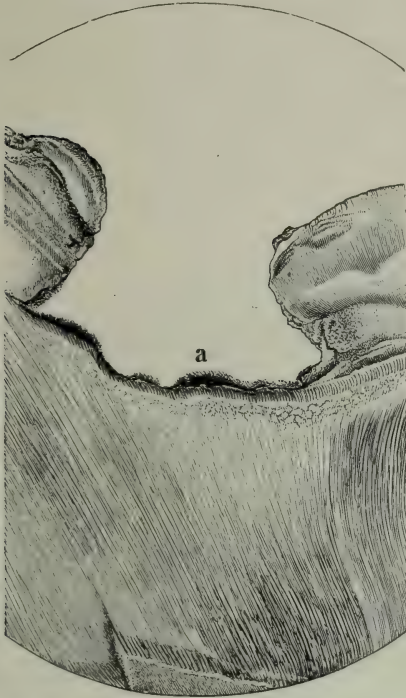
"Caries of the teeth has its beginning when the conditions of the mouth are such that micro-organisms causing caries form gelatinous plaques, by which they are glued to the surface of the teeth." (Black.)

I am not quite convinced that the nature of this film has been determined with sufficient clearness, or whether its significance and importance may not have been somewhat overrated. In the first place, I am at a loss to know just how the conclusion has been arrived at that these plaques are of a gelatinous nature, or that they are in any way "glued" to the surface of the tooth.



Dr. Black (*Independent Practitioner*, 1886, p. 546) describes a chain coccus found by him in the mouth which when cultivated in peptone bouillon with 2 per cent. of sugar, gelatinized the

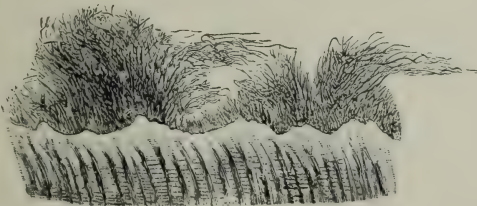
FIG. 2.



Undermining enamel decay. *a*, masses of bacteria lining the cavity. (50:1.)

fluid in twenty-four hours so entirely that it did not run out when the tube was inverted. The bacillus *buccalis muciferens*, a pathogenic micro-organism rarely occurring in the mouth,

FIG. 3.



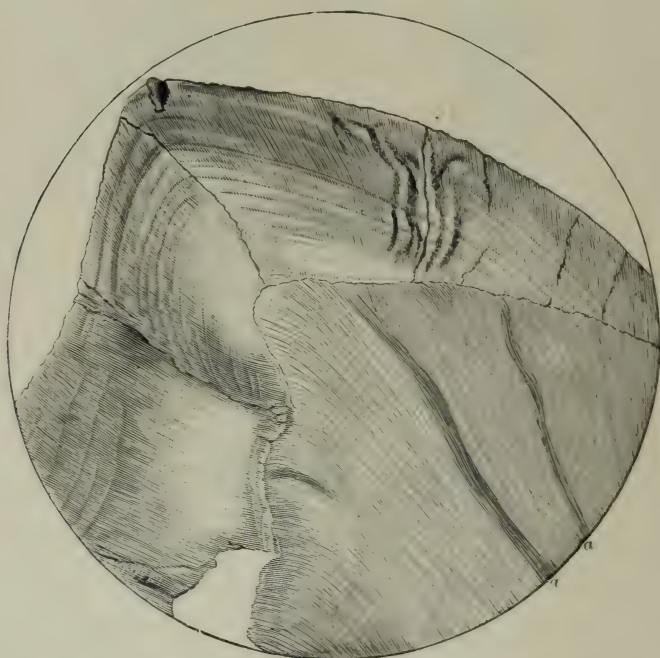
Fringe of *Leptothrix* threads on the border of a section of decayed dentin. (400:1.)

produces a starch-like growth on the surface of agar cultures, while *ascococcus buccalis* ("Micro-organisms of the Human Mouth," p. 87) produces colonies almost cartilaginous in con-

sistence, and I can readily conceive of its producing a gluey substance under favorable conditions. These facts do not, however, entitle us to assume without direct proof that the bacteria found on the teeth are glue-makers. Then, again, if the films were glued to the surface of the tooth, why should not this glue prevent acids from acting upon the teeth and so virtually protect them?

The version that the films protect themselves externally by a coating of glue cannot, it seems to me, be seriously entertained, there being no evidences of such an arrangement. Besides, if

FIG. 4.



Beginning decay of enamel with transparent cone of dentin. (Under weak power.)

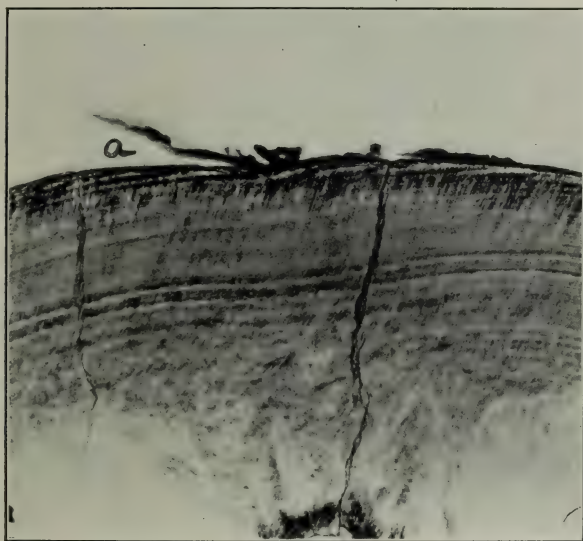
actually present, it would prevent the access of food to the film, without which it could not produce acid or anything else.

On the whole, the question as to whether bacterial films secrete a viscous substance of any kind by which they become adherent to the teeth, or by which they are protected in any way, needs looking into more carefully than has hitherto been done. At present no real evidence, as far as I am aware, has been produced in favor of it. There is no doubt that the bacterial growths illustrated in Figs. 2 and 3 (as well as on page 306 of the *Independent Practitioner* for 1883) are identical in their nature with the film or gelatin plaque of Williams and Black, but the relation of the growths which I have described in connection with the enamel cuticle (Fig. 1) to the film is not so apparent. Accordingly, the

first question which I undertook to determine was: Is the film really attached to the surface of the enamel, or is it only a growth in, or adhering to, the enamel cuticle, similar to that represented in Fig. 1?

Some forty different ground sections stained by Gram's and by other methods were placed separately upon object-glasses in a drop of water, covered with cover-glasses, and nitric acid allowed to flow under the glass, being drawn through by a bit of bibulous paper placed against the edge of the glass at the opposite side. In nearly all the cases, as soon as the acid came into contact with the section, the film was seen to separate from the surface of the enamel in a few seconds or a few minutes, depending upon the

FIG. 5.



Showing that the film comes away with the enamel cuticle. (36:1.)

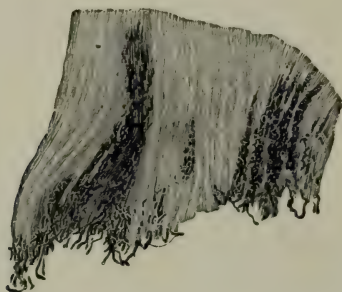
strength of the acid employed, leaving the surface or margin perfectly free. (Fig. 5, *a*.) In my later experiments I have found it preferable to put the section in a shallow glass vessel containing nitric or hydrochloric acid of determined strength (say 2 per cent.). Here the same phenomena take place much more slowly, and they may be studied more accurately. Or the tooth, after being stained in eosin, may be placed *in toto* in the acid solution and the coming away of the cuticle along with the film be observed under a magnifying-glass—a method which I have found very useful and instructive.

In the fissures the film ("Nasmyth's membrane") was naturally found to follow the surface of the enamel to the bottom, where it was generally much thickened. Here it did not free itself until the enamel was well-nigh dissolved away. In cases of the hard and



polished black spots often observed on the approximal surfaces of teeth which have lost their neighbors and which I have designated as decay marks, the enamel cuticle remains adherent long after it has separated everywhere else. It seems to have become firmly coalesced with the surface of the enamel, and when it comes away after prolonged action of the acid it carries portions of the

FIG. 6.



Section showing invasion of diseased enamel by bacilli.

enamel along with it. It produces the impression that some sort of a *tanning* process has taken place, although this of course seems impossible in the human mouth.

If teeth with decay marks are left in a solution of hydrochloric acid till the enamel begins to dissolve away, it will be found that these spots resist the action of the acid longer than the normal enamel.\*

FIG. 7.



Bicuspid with large facet entirely free from film. (The shading on the crown indicates the extension of the film.)

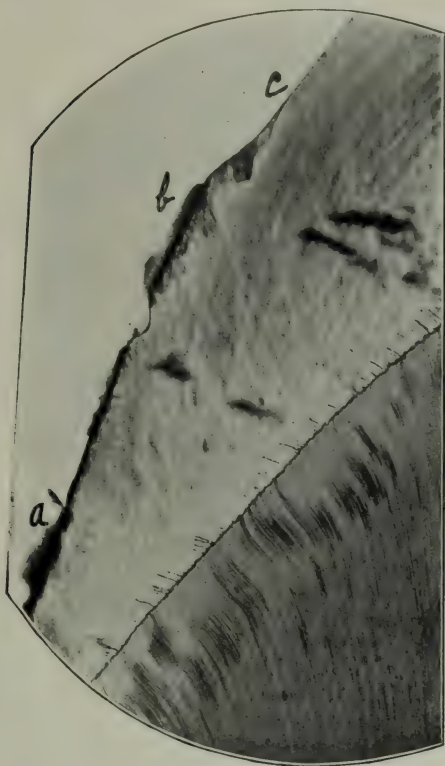
In ordinary cases of decay the enamel cuticle does not become attached to the surface of the enamel so as to perceptibly retard its removal by acids, except where disintegration of the enamel is already in progress, when a slight attachment appears in some cases to be brought about. I have frequently observed the film

---

\*If we could determine the nature of the process which takes place in decay marks, we ought to be able to derive some suggestion from it which would be of value in the prophylactic treatment of the teeth as well as in dealing with caries.

to extend over the margin and into the cavity of decay. This may be easily verified by staining carious teeth in eosin and then

FIG. 8.



Section of enamel with beginning caries. *a*, *b*, film; *c*, facet partially carious but free from film. (35:1.)

watching the enamel come away in a 5 per cent. solution of hydrochloric acid under a magnifying-glass.

FIG. 9.



Bicuspid showing film extending upon facet at upper corner.

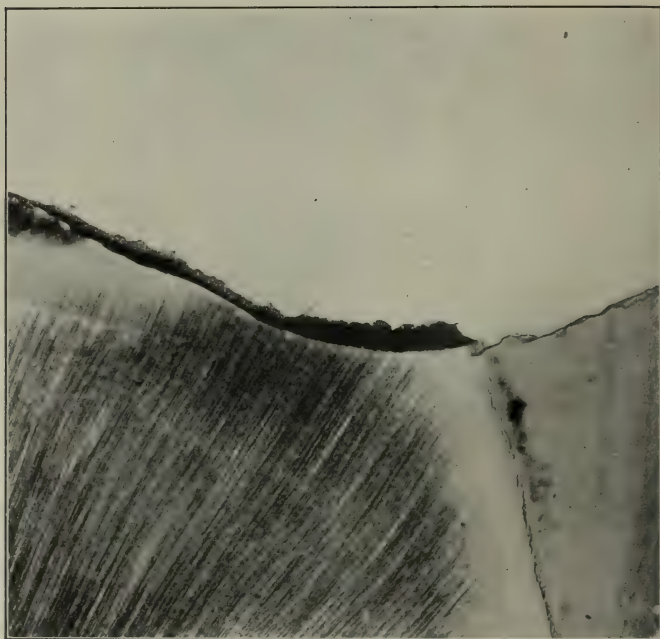
We may say as a result of the above observations that the film primarily represents a growth of bacteria in or upon the enamel cuticle, and is not, with the exception mentioned, mechanically

attached to the enamel itself. The fact that bacteria may work their way between the enamel prisms when a partial disintegration has taken place was long since established. (See Fig. 6, from "Micro-organisms of the Human Mouth.")

2. The next question which presented itself was: Are these growths formed only in connection with the enamel cuticle?

In order to answer this question it was only necessary to make a number of sections passing through points where the enamel cuticle had been worn away, either by mastication or by friction

FIG. 10.



Film on the surface of dentin exposed by wear of mastication. (24:1.)

with the neighboring tooth. Sections through approximal facets show that the film in the majority of cases is cut short at the point where the facet begins. (Figs. 7 and 8.)

This, however, is not always the case, and we occasionally find the film extending upon the facet (Fig. 9), especially in cases where a partial decalcification has already set in. Likewise where cusps have been worn down by mastication we may find a perfect film (Fig. 10), especially where for some reason the surface has not been kept clean, either through loss of the antagonizing tooth or when on account of some diseased tooth the mastication has been restricted to the other side of the arch. Accordingly we may say that while the film more readily secures attachment through



FIG. 11.



Approximal facets showing double curvature. (20:1.)

FIG. 12.



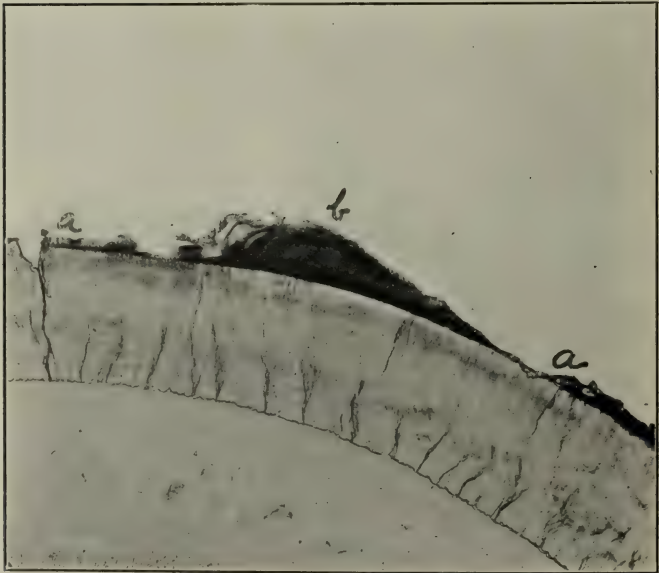
Caries working its way along an approximal facet. (35:1.)

FIG. 13.



Dense film lining the surface of an exposed root. (28:1.)

FIG. 14.

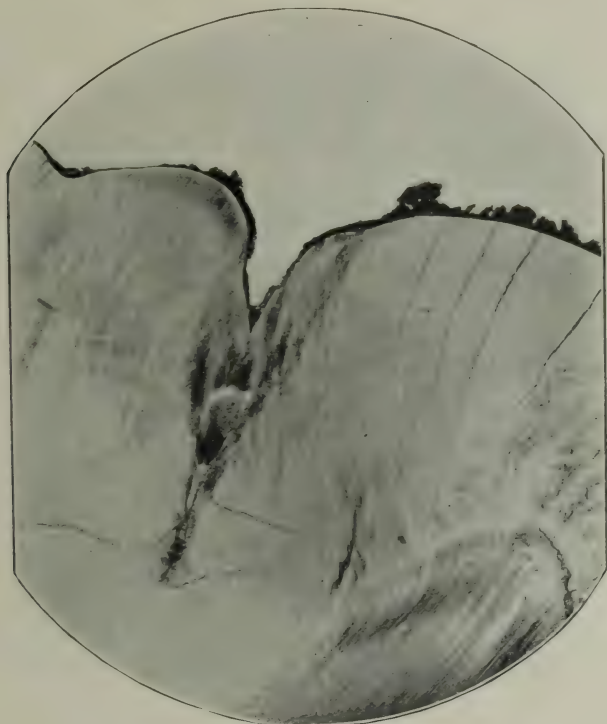


Section of enamel. *a, a*, film; *b*, nodule of tartar lined by film. (24:1.)

the medium of the enamel cuticle, the latter is not essential to its formation.

3. The film, as we might expect, is not confined to the surface of the enamel, but appears everywhere on the dentin (Figs. 2, 3, and 10); at the neck of the tooth, on the roots (Fig. 13) as far as they are exposed, on the surface of tartar (Fig. 14), etc. Films on the surface of the cement or dentin do not separate from them on treating the sections with acid, *i. e.* they are attached directly and mechanically to the surface, it offering them points of attachment much more readily than does the enamel.

FIG. 15.



Dense film on the surface of intact enamel. (30:1.)

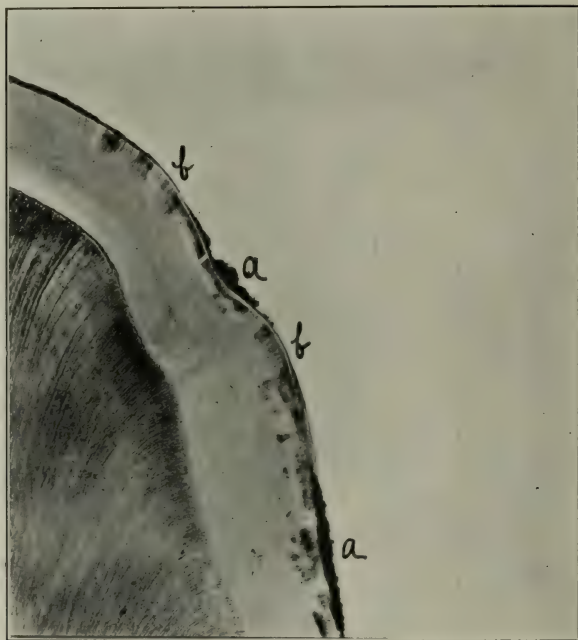
4. Are the bacterial films or plaques restricted to carious teeth? This question is very easily answered in the negative. They are not characteristic of carious, but of dirty teeth, or rather of teeth whose surfaces are not kept perfectly cleansed either by natural or artificial friction. Teeth which are not kept clean by the process of mastication, teeth without antagonists, loose teeth which oscillate in the mouth and are covered with greasy deposits (*materia alba*, Leeuwenhoek), show the most abundant growths. In fact, it would be very difficult to find a tooth which did not show bacteria adhering to the surface at some point or other.

It is customary to speak of the "point of contact" of the teeth.



and some have likened this contact point between teeth to that between two marbles. We should, however, bear in mind that the crowns of teeth are not even approximately spherical, nor are the approximal surfaces of the teeth always convex. They may be plane or even concave, or convex in one diameter and concave in another. Furthermore we must bear in mind that in all cases where the teeth are in direct contact, the approximating surfaces, especially of the molars and bicuspid, soon show facets produced by the friction of the teeth upon each other. These facets vary in size from such as are not larger than a pinhead to such as take up

FIG. 16.



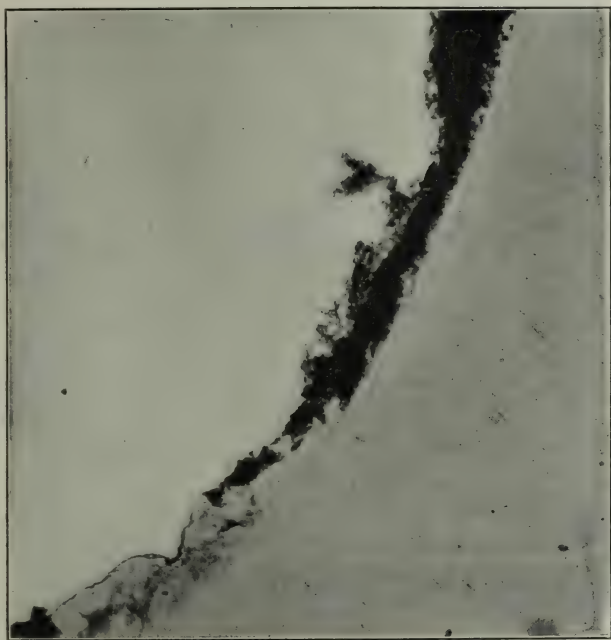
Section of hog's tooth. *a, a*, depressions with film; *b, b*, free from film. (35:4.)

nearly the whole approximal surface of the teeth (Figs. 7 and 9), and frequently present a curved surface (Fig. 11), depending upon the comparative resistance offered by the enamel in the two teeth and in different parts of the same tooth. The larger the facet, the more the point of decay is shifted toward the neck of the tooth. This, I think, may be readily understood from a study of Fig. 11, and it has already been pointed out by Dr. Black; although very frequently the facet is itself attacked, as seen in Fig. 12, and the caries then works its way toward the morsal surface. They may often be found in fissures and depressions when other parts of the surface are comparatively free. We may put it down as an axiom that films will be found wherever the surface of the tooth is not

kept free from deposits of mucus, epithelium, food, etc. Figs. 10, 13, 14, and 15 show typical cases of extensive formation of films without a trace of caries.

The same applies to the teeth of animals as far as I have examined them; for instance, to those of the dog, hog, warthog, and gorilla. Fig. 16 shows the formation of a film in the depression on the surface of a hog's tooth; Fig. 17, tartar and film on the neck of a dog's tooth; Fig. 18, film on the crown of a molar of the orang. I have been surprised at the extent of the film found on the teeth of dogs, especially when the mouth is not in a healthy condition.

FIG. 17.



Tartar and film at the neck of a dog's tooth. (42:1.)

5. Do films always accompany carious processes? This question is not so easy to answer. As a rule, undoubtedly, Yes. Figs. 19 and 20 show the typical case of caries with its accompanying coat of bacteria. We find, however, abundant cases where caries is present without a trace of film, although it would be difficult to prove that the film had not been there at some time or other. I have a number of sections showing caries of the approximal surface, in which the whole margin is free from any film (Fig. 21); many others, again, in which only part of the margin shows the film (Fig. 22, and also Fig. 12). Then there are preparations showing decaying margins free from bacteria, while healthy margins near by show a prolific growth. Of course it may be

said that the films may have been torn away by grinding, and I recognize the validity of this objection, although the film adheres to the surface with considerable tenacity.

More recently I have adopted a method of determining the presence of plaques on the surface of the tooth which eliminates the above source of error, is remarkably simple, and gives us an idea of their distribution and extent which could not be obtained in any other way. It is only necessary to put the tooth to be examined

FIG. 18.



Film on the enamel of a tooth of an orang-utan. (30:1.)

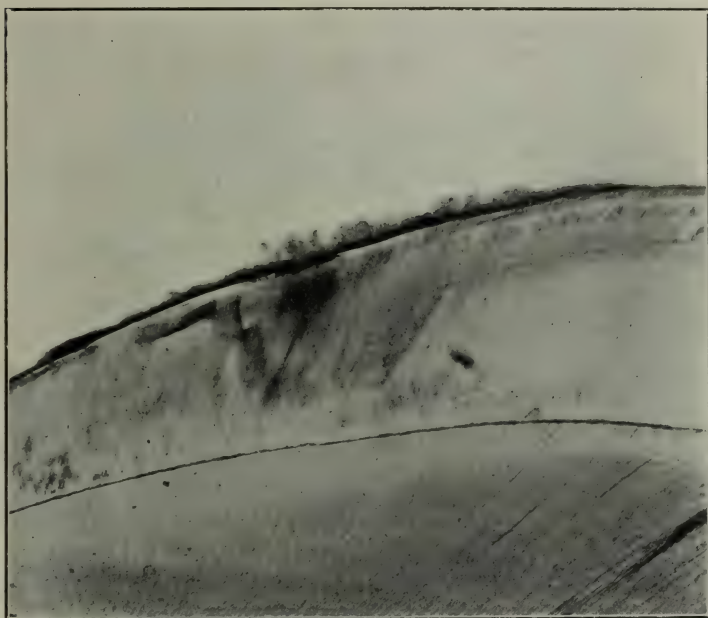
in a concentrated aqueous solution of eosin, where it may remain for from five minutes to an hour, when it should be removed and rinsed in water. Wherever the surface of the tooth is covered by the film, it will have taken on a bright red color. The tooth should be put under the hydrant for a minute or two before exposing it to the coloring solution, in order to free the surface from mucus or particles of food.

From two large jars containing approximately one thousand teeth in dilute alcohol, I picked out over one hundred of the best, and washed and stained them as described above. I was surprised at the universal presence and extent of the films. Of the molars and bicusps only the cusps and usually a small portion of the



buccal, less often of the lingual, surface were found to be free of films. (Figs. 23, 24, and 25.) Of the incisors and canines the labial surface showed the film without a single exception, sometimes continuous, sometimes in streaks and spots corresponding to inequalities of the surface. At the neck of the tooth, where the enamel was completely protected by the gums, there was no film, *i. e.* the surface remained unstained. The concave portion of the lingual surface also showed the film constantly, while the cingulum, the lateral margins, and cutting edge, except where worn down and concave, were as a rule free. Fissures, grooves, pits, and depressions of all kinds are indicated by a deeper staining and denser film.

FIG. 19.



Typical case of enamel caries with film. (36:1.)

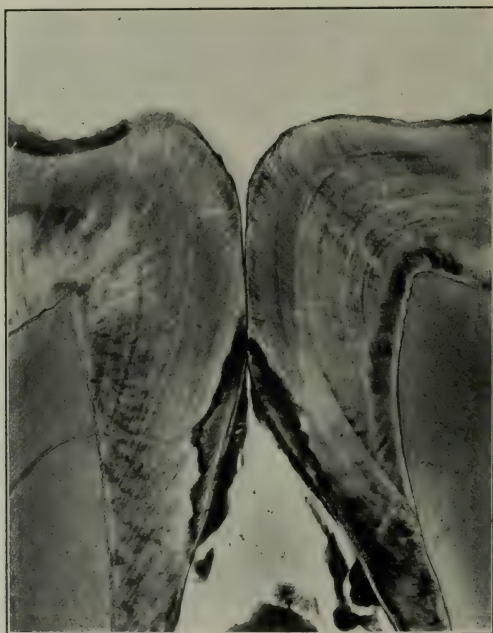
The surfaces of teeth which apparently had not for some time been exposed to the friction of mastication appeared stained *in toto*. The black spots which I have designated as decay marks generally take on little or no color, which indicates that they are comparatively free from bacterial films,—a conclusion which I had already arrived at by examination of ground sections. In a few cases I have found opaque (caries) spots on the enamel which took on no color either with eosin or gentian violet (Gram), from which the conclusion was warranted that no film was present. Sections cut through the spots confirmed the diagnosis of caries without film. A case of this kind is shown in Fig. 21.

We may accordingly answer question No. 5 by saying that films

almost invariably accompany decay of the teeth, but that by diligently searching we may find decaying spots which have no film (Fig. 21), or at least on which the film is not co-extensive with the decay. (Fig. 22.) It seems just possible, however, that the film may be present at one time and absent at another.

It may be objected to this method of staining that not only bacteria but all kinds of organic deposits on the surfaces of the teeth are stained by eosin. This is to a certain extent true, although where we have organic deposits on the teeth we may be sure that bacteria are there also. In order, however, to eliminate

FIG. 20.



Approximal enamel caries with films. (18:1.)

any possible error from this source, I stained an equally large number of teeth after the Gram method (alcohol—concentrated solution of gentian violet in anilin water (4 anilin oil to 100 water)—iodin solution (iodin 1, potassium iodid 2, water 300)—alcohol—xylol). The result was practically the same, the staining (indicative of the presence of bacteria only) being slightly less extensive than that produced by eosin. Taking into consideration the fact that not all bacteria are stainable by the Gram method, and as a result of the microscopic examination of the enamel cuticle, I have come to the conclusion that the eosin staining furnishes a better criterion for determining the distribution of bacteria on the surface of the teeth than the Gram method.

In Figs. 23, 24, and 25 the darker parts indicate the extension of the film as shown by the staining process.

Non-erupted teeth, as far as I have tested them, take on no stain with eosin.

The presence of a film on a carious surface cannot, however, be taken as evidence in favor of the supposition that this film gave rise to the caries. Caries occurs at points which cannot be kept free from accumulations of food, *i. e.* at points which are not kept mechanically cleansed. Films are likewise found under exactly the same conditions, and consequently films and caries *must* occur together, but we are hardly justified by this fact in making

FIG. 25.



Caries of the enamel without film. (25:1.)

one of them dependent upon the other. If there is any interdependence at all, it is just as natural to suppose that the softening of the surface of the tooth produced by a beginning decalcification furnished a more ready opportunity for the attachment of the film.

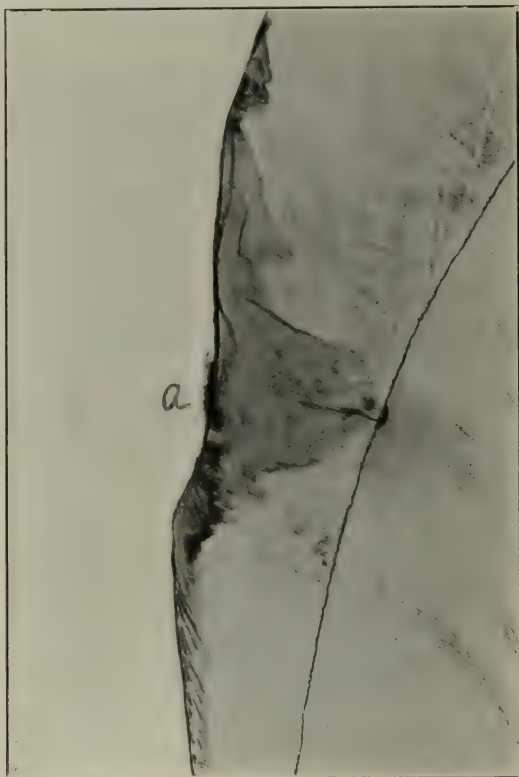
I have three jaws in alcohol which do not show a trace of tooth-caries and yet they all revealed a normal extension of the film on staining with eosin. The teeth may be examined for films *intra vitam* by adjusting the rubber dam and swabbing them with a pledget of cotton saturated with eosin solution. I was curious to see how the teeth of my colleague Dr. York, who is immune to caries, reacted. It was found that, for example, 1m and 2b, which appeared to be less thoroughly cleansed than the others, presented



as fine a growth as one could desire, only the cusps being free. On the whole, Dr. York's teeth being carefully kept and highly polished, show the film restricted chiefly to the cervical portion and approximal surfaces.

If we put teeth or pieces of teeth in a mixture of foodstuffs and saliva at the temperature of the human body, we know that they become decalcified in the course of a few weeks by the acids

FIG. 22.



Caries with film restricted to a small portion of the surface at *a*. (30:1.)

produced in such a mixture. If in the human mouth food containing starch or sugar lodges between the teeth, we know that it likewise undergoes an acid fermentation, and why should not the acids produced thereby attack the teeth? It is said that they are dissipated by the currents of saliva in the mouth, but this does not appear to me to be sufficiently well substantiated. All night long we have no currents of saliva, nor do we, in fact, during the greater part of the day. It hardly seems probable, moreover, that such currents, when present, are sufficiently strong to wash

out the acids produced in interdental spaces, fissures etc., when they are packed full of food. How little the saliva is able to penetrate the interdental spaces when packed with food or any similar

FIG. 23.



FIG. 24.



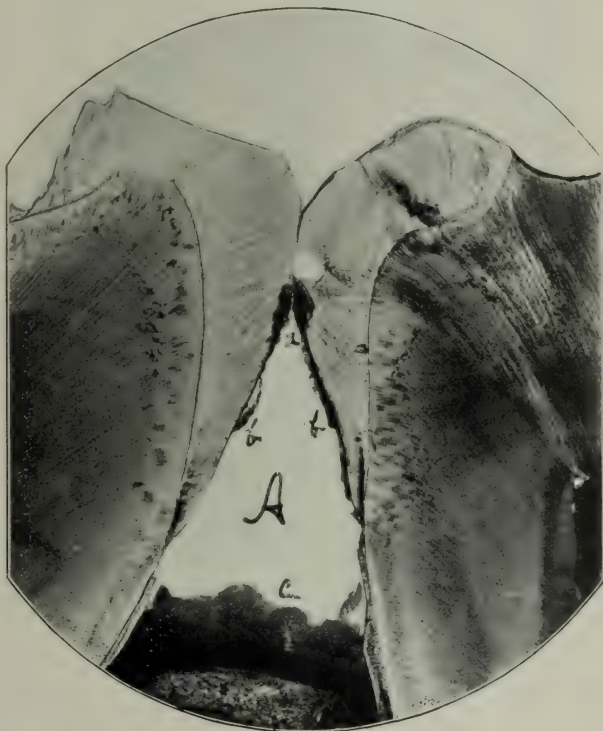
FIG. 25.



The dark parts of the surface of the crowns indicate the extension of the films.

body is shown by the fact that pledgets of cotton left for a few days between the teeth, unless soaked in some strong antiseptic,

FIG. 26.



*A*, interdental space formed by destruction of the papilla. *c*, margin of gums; *b*, film; *a*, beginning decay. (20:1.)

become intensely foul, showing that ferment products formed between the teeth are not dissipated by the saliva. We also know that food particles filling cavities of decay or interdental spaces,

unless consisting only of albuminous substances, show a distinct acid reaction. Cases like the one shown in Fig. 26, where the decay is seen to begin just at the spot where the surfaces of the teeth separate, appear to confirm the old view that the beginning of the decay is caused by the acids (generated in the food occupying the interdental space) which are held at the point *a* by capillary attraction.

The statement above quoted from my "Micro-organisms of the Human Mouth," "The membrane . . . affords a matrix for bacteria as well as for minute particles of food and thereby accelerates the process of decay,"—expresses fairly my present impression regarding the gelatin plaques under consideration.

FIG. 27.



*b*, cavern on the border of enamel and dentin; *a*, enamel with secondary decay; *c*, film.

Although we have no absolute proof for such a supposition, I think we may be justified in assuming that they tend to intensify the processes, of whatever nature they may be, which at the time are going on upon the surfaces of the teeth. If the food accumulated on the surface or in a cavity be undergoing acid fermentation, it is readily conceivable that a special growth of bacteria in immediate contact with the surface of the tooth would intensify the action at that point, though the fermentation itself would certainly not be solely dependent upon such a growth. If, on the other hand, there is at the time being an accumulation of purely nitrogenous food, or if the surface of the tooth is coated with a greasy layer of mucus, epithelium, etc., as we frequently find in the case of loose molars, there will be a putrid fermentation with an alkaline reaction, which again may be most intense directly



on the surface. In such cases it is conceivable that the film might serve as a protection to the tooth.

It remains to be stated that films are also found on the inner surface of the enamel in secondary decay of this tissue. Fig. 27 shows a case of this kind such as I have repeatedly met with.

#### SOME PHENOMENA OBSERVED ON DECALCIFYING SECTIONS OF ENAMEL.

While carrying out the investigations recorded above, some phenomena relating to the action of acid upon the enamel came to my notice, which I will briefly refer to here.

If a ground section passing through a facet or any worn surface of a tooth is subjected to the action of dilute nitric or hydrochloric acid, not only does the enamel cuticle (together with the film) separate from the surface adjoining the facet, but at the same time a very thin delicate membrane, apparently continuous with the enamel cuticle, rises from the surface of the facet. This observation puzzled me at first not a little. Sections passing through *any* spot on the tooth from which the surface of the enamel has been slightly ground away show the same phenomenon.

This membrane was found not to be due to a deposit upon the surface of the tooth, but to represent only the organic matrix of the enamel which remains in position, while the enamel margin, being gradually dissolved, recedes, thus giving an impression as though a membrane rose from the margin. The amount of organic matter (matrix) in the enamel appears to vary in different teeth. In some cases in which stronger nitric acid was drawn under the cover-glass, the enamel melted away before the acid in such a manner as to remind one of a snowflake melting on a warm pane of glass, leaving a scarcely visible brownish yellow residue, while in other cases a tissue-like substance remained behind, appearing often like a fringe of delicate fibers which waved to and fro with the currents of water or was knocked about by the bubbles of gas and was readily stained by eosin.

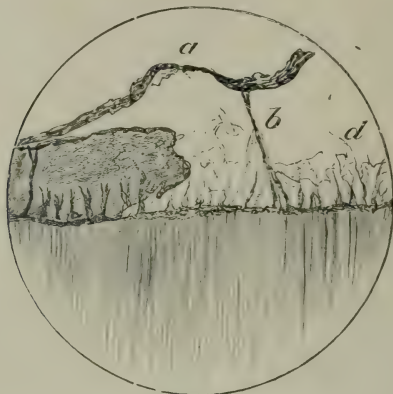
The following phenomenon, to which, as far as I know, no other observer has as yet called attention, appears to me to be well worth consideration, although at present I am not able to offer any satisfactory explanation of it.

If a thin ground section through the crown of a tooth is placed in a shallow vessel containing a 2 per cent. solution of hydrochloric acid, we will find in the course of half an hour to one hour that the enamel cuticle separates from the margin of the section, except at certain points where there are cracks extending through or into the enamel. Here it seems to remain attached by means of delicate fibers extending into the cracks; and even after the whole thickness of the enamel has been dissolved away, we shall find the enamel cuticle still fixed to the surface of the dentin by means of this bundle of fibers, as shown at *b* in Fig. 28. I have not, however, found that the apparent bond of connection between enamel cuticle and dentin was present in all cracks of the enamel. Again, we frequently observe delicate branching cracks extending from the

surface of the dentin for a short distance into the enamel. When the enamel is dissolved away, dark apparently branching fibers, conforming in shape to the cracks, will be found to remain, as seen at *d* in Fig. 28.

I shall not attempt to offer any explanation of these phenomena, although the thought suggests itself that we have here to do with

FIG. 28.



Action of dilute acid on enamel.

uncalcified enamel prisms (structures analogous to the penetrating fibers of Sharpey), and that their presence causes a weak line in the enamel, which accounts for the crack. I must not, however, neglect to call attention to the fact that we do not find these bundles of fibers extending through the enamel in all cases where there are cracks.

## ARTIFICIAL DENTURES, WITH SPECIAL RELATION TO THE IMPRESSION, TAKING THE BITE, AND ARTICULATION.

BY RODRIGUES OTTOLENGUI, M.D.S., NEW YORK, N. Y.

(Read at the seventh annual meeting of the Northeastern Dental Association, Springfield, Mass., October 30, 1901.)

UNLIKE some of the lower forms of animal life, man is not endowed with the ability, physically, to reproduce lost parts. His genius, however, has enabled him to mechanically produce substitutes which more or less restore him to normal comfort. Of these mechanical substitutes I know of none of which so much is expected as of artificial dentures. No other is supposed to fully perform all the functions of the original. Artificial eyes, ears, or noses are merely cosmetic appendages restoring outward physical proportions. Artificial limbs, or parts of limbs, perform normal functions as well, but only in a very limited degree. With an artificial denture, on the contrary, the patient expects to eat, talk, taste, smile and look pretty,—in short, to do

everything that he had been able to accomplish with his natural teeth. It is a high tribute to the progress of dentistry, therefore, that we have among us so many masters of the art, that it has become a notorious and well-advertised fact that many so easily overcome the obstacles that they can afford to furnish full upper and under sets of teeth for about ten dollars,—yea, and guarantee the result.

In spite of the existence everywhere of this superabundance of extreme skill, I venture to believe that there are yet a few problems which even the most skillful among us stand ready to discuss, and the object of this paper is to bring before you three of these problems, in the hope that if from my own experience I may be able to sow a single seed that is of advantage to any of my hearers, I may also be able to reap a harvest of riper knowledge from the discussion that may follow.

#### TAKING THE IMPRESSION.

We would perhaps all agree that a perfect impression is a *sine qua non*. Yet I ask the simple question, What is meant by a perfect impression? and discussion is at once opened. A perfect impression, and from such impression a perfect model of a mouth, in which all teeth are present, should be obtainable by all entitled to call themselves dentists. Yet we see few of them. But this belongs to orthodontia rather than to prosthodontia. The realm of the latter is entered, however, as soon as even one tooth is lost which we are called upon to supply. This will usually be the simplest task for the prosthodontist, the difficulty increasing with the number of teeth absent from the arch, until we come to the edentulous jaw. When you think of jaws in which are to be found a few teeth only, and these leaning toward each other as though seeking companionship in their increasing loneliness, you may be inclined to question my last statement. I am only expressing a personal opinion, and in a moment shall support the assertion with my reasons.

I use plaster of Paris for all classes of impressions with absolutely no exceptions. Where only a few teeth are absent, or where all have been lost, the impression tray is utilized. Often, where but a few teeth remain, it is best to dispense with a tray of any kind. In such cases the plaster is introduced with a silver-plated table knife and pressed and held in position with the fingers. This rule is peculiarly applicable in the lower jaw when the tongue is incorrigible. I have said that I use plaster exclusively. A good rule reads: "In proportion as it would be difficult to remove an impression, plaster of Paris becomes needful." Teeth which lean toward one another cannot be reproduced with anything but a material which fractures sharply, an attribute not possessed by modeling compound or wax. Where only a part of the whole number of teeth have been lost, the point to be observed in making a model is the perfection of the form of the teeth themselves. Accuracy in relation to the soft parts will usually be attained without special effort.



This, however, is far from true in an edentulous mouth where we are dealing exclusively with soft tissue, or, with soft tissues overlying hard tissues in differing proportions. Were the edentulous jaw equally hard throughout its entire extent of surface, the taking of an impression and making of an accurate model would be simple enough. We would but need to fill a tray with plaster mixed to a creamy consistence, apply it carefully and without pressure, and allow the plaster to set. The resulting impression would give an accurate model, from the standpoint of an anatomist. Often such a model will but lead the prosthodontist to failure, and a failure which too often he cannot comprehend. Why?

Speaking now of the maxilla, or upper jaw, one requisite in a set of teeth, more than all else demanded by the patient, is that they should "stay up." Now it has been the sad experience of dentists that the mere fitting of a plate over an accurate reproduction of the surface of the maxilla will not invariably yield a plate that will stay in position. For this reason the prosthodontist resorts to various alterations in his models, some declaring a suction chamber to be necessary, while others loudly declaim against this course, but resort to relief chambers produced by the application of layers of metal over the harder parts of the mouth. Others favor scraping the heel or part of the model along which is to lie the back border of the plate. Still others produce raised lines, more especially in vulcanite work. I know of none who feel that they can rely upon merely fitting a plate over an anatomically accurate model.

If, then, alteration from the really accurate model is necessary, let us for a moment inquire as to the means of accomplishing this, and then ask ourselves whether anything can be gained in this direction by the method of taking the impression. The roof of the mouth being supplied with soft tissues of differing thickness and adhering with different degrees of firmness to the underlying bones, experience has taught that a perfectly fitting plate, because of the yielding of the softer parts, will finally rest and rock upon the harder tissues, thus producing movement which destroys the retentive quality whether it be suction or adhesion. It happens that the harder places are usually along the central area, so that those opposed to suction chambers declare that alleged success with them is due to their acting as relief chambers, and that they are unnecessarily deep. If we admit this claim, we still find ourselves in a difficult situation. It is by no means a simple problem to so arrange the layers of relief metal that the plate, when completed, will press equally at all places. It is largely a matter of judgment and skill, and those who declaim loudest against suction chambers, having the skill to succeed without them, seem utterly unaware of the fact that they enjoy a dexterity possessed by few men.

Can we then, at the time of taking the impression, produce a model which will be more nearly the desideratum of the prosthetic worker than most of us do at present, and thus reduce the degree

of skill needed to equalize the pressure of our plate after construction? I have within the past three years been applying myself to this problem, and I think the result has been sufficient to warrant my communicating it to my *confrères*.

I have said that plaster of a creamy consistence will yield an anatomically accurate replica of the parts with which it is placed in contact without pressure. In a mouth where there is a considerable difference in the resistance of the soft tissues I have been taking impressions in the following manner: The plaster is sufficiently salted to insure quick setting. It is mixed comparatively thin, and stirred continuously in the cup until it noticeably begins to stiffen. It is then placed in the tray, and when quite stiff passed to the mouth. It is quickly carried to position, over the posterior parts first, and then pushed to place forcibly, force being directed upward and anteriorly. This force, together with the stiffness of the plaster, compresses the softer parts of the tissues of the vault,—so much so, indeed, that a very trifling relief vacuum over the hardest places will give us a plate resting firmly in position. By this means some skill and rapid dexterity will be needed to obtain a good impression of the labial and buccal aspects of the ridge. If a combination gold plate with rubber attachment is to be made, this need receive no special attention, as the gold plate need not be brought forward farther over the ridge than will be shown in the impression, and a subsequent impression taken in the ordinary way with the gold plate in position will give the ridge over which the vulcanite is to rest. Where the plate is to be made of vulcanite, after pressing the impression tray to place, the left hand may firmly continue the upward forward pressure while the fingers of the right hand first force the plaster under the lip, and then drawing the lip over the plaster exert pressure on the outside of the lip, which will insure an impression of the ridge. Another method is as follows: Just after transferring the plaster to the tray, quickly take up some plaster on the knife and smear it along the buccal and labial surfaces of the ridge. By this time the plaster in the tray will be firm enough for the class of impression here advocated.

Perhaps if I recite an extreme case it will be instructive. A gentleman applied to me for an upper denture on vulcanite, complaining that none that he had had enabled him to eat, nor would they "stay up." Examination showed that the slightest pressure anywhere along the ridge tipped the plate, this being especially true in the incisive region. The plate bore evidence of careful, conscientious workmanship. It had a suction chamber, properly placed, according to rule. Examination of the maxilla showed entire absorption of the bone in the intermaxillary region, the ridge though well defined being nothing but a mass of extremely soft tissue, readily moved into quite different positions.

In taking this impression I used the knife, first placing a plentiful supply of plaster along the buccal and labial surfaces of the ridge. By this time the plaster in the tray was setting rapidly and was quite stiff. I placed the tray in the mouth, pushing it up at the back first and then forward and upward, exerting great pres-

sure with both hands. The plaster in the tray of course united with that in the mouth, and the resulting model was accurate in all parts from the viewpoint of the prosthodontist. In the incisive region, however, the ridge was pushed forward abnormally, and this was carefully scraped off little by little, in order to retain the general shape, the scraping continuing until the labial outline conformed to the general curve of the other parts of the ridge. From this impression two models were made. Over one a plate was vulcanized having a suction chamber. On the other a single layer of heavy tin foil was laid extending over the entire surface of the harder parts. On the model so treated, another vulcanite plate was made. Both of these plates, of course, carried no teeth. When tried in the mouth, I could observe no advantage of one over the other. I therefore used the one having only the relief chamber, and mounted the teeth so that in the incisive region there should be no overbite of any consequence. With this plate, the patient was enabled to incise and chew his food and the adhesion was good. I consider that the chief obstacle in this case was overcome by the means employed in taking the impression, the plate acting so as to exert such compression as to solidify the soft, I might even say flabby, tissues in the anterior region.

#### TAKING THE BITE.

Next in importance to the model is the accuracy of what we call the bite. To a lay mind this would seem a simple procedure, yet the dentist is rare who has any degree of confidence in his own skill in this procedure, and dentists are not especially lacking in self-appreciation. Will you ask why I think dentists have little faith in their ability to accurately take a bite? I will reply that the proof is to be found in the fact that it is common practice to try in the teeth. I think that every time a dentist tries in a set of teeth, after mounting and prior to completion, he tacitly admits that he doubts the accuracy of his bite. I remember that one gentleman replied to this assertion of mine by stating that he tries in a set to be sure of his cosmetic effects, but when I asked him, "Do you never find it necessary to alter the position of the teeth because of faulty occlusion?" he laughed and turned away. I will admit that in a few instances it may be wise to see the teeth in the mouth in order to be sure that the arrangement will suit the physiognomy, but that is not the kind of trying in to which I allude when I say that the man who tries in all sets of teeth before finishing them has no faith in the accuracy of his bite.

What engenders this almost universal lack of faith in one's own skill? If we discuss but a few moments the action of the patient, compared with the dentist's methods, I think the mystery will pass. The action of the mandible is not a mere up-and-down motion from fixed hinges, the movement being in a fixed arc. On the contrary, the mandible describes a more or less complex movement, including forward and lateral motion. The two important acts of the mandible bearing relation to the taking of the bite are, first, the more or less involuntary act of simple closure of the mouth,



when commonly the mandible will assume its most posterior pose; second, the always voluntary movement which accomplishes incision, and which brings the mandible into a forward pose. It is so true that this is the voluntary closure, that almost all persons who close the mouth upon request bring the mandible forward. This is as true of those who have teeth as of those who have none. If the mere request of a patient "to close the mouth," results in this conscious forward movement of the mandible, how much more true will it be that he will assume the forward pose if asked to bite through wax or other material? He is thus told to incise something, and naturally the mandible assumes the incising action. How then is the bite to be obtained with certainty that the mandible will be in the involuntary rather than in the voluntary pose?

If a gold plate is to be made, of course it is used as the basis in taking the bite. In vulcanite work I like to make the plate first, and attach the teeth subsequently, in which case it can be used in the same manner as the gold. But any base plate can be used on which to build up a biting surface with modeling compound, or the compound may be used alone. In any event a ridge of modeling compound is built upon the base plate, and then chilled with cold water. It is then carried to the mouth, and a sharp knife is used for trimming away all surfaces until a neatly formed plate and ridge are produced, which can be placed in the mouth without distorting the lips or cheeks. The comfort of the muscles will render the patient much more tractable. The biting surface is next trimmed away bit by bit, until every tooth of the opposing jaw touches the surface of the modeling compound at the same time, the length or opening of the bite being as desired. It will be observed that now, while all the teeth touch the modeling compound, there is no incision,—that is, the patient bites nothing. It will therefore not be difficult to have him bite with the mandible properly posed. This accomplished, the modeling compound is to be marked with a sharp instrument along the labial surfaces of the opposing incisors where they come in contact. This will be a guide to accuracy. Next, a very thin film of wax is melted upon the modeling compound in the molar and bicuspid region on one side only. Thus the first act of actual biting is through a very thin layer of material, and being at the back of the mouth there is little effort to move the mandible forward. At any rate the mark on the compound in the incisive region will be a guide to determine the matter. This step will produce but a mere imprint of the cusps of the molars and bicuspids on that side, and is next repeated for the opposite side. Then by slow stages more and more wax is added in these posterior regions until a perfect imprint of the occluding surfaces of all the molars and bicuspids shall have been obtained, all the while nothing having been placed in the incisive region for the patient to bite into.

From this point the procedure varies. The best method is to take an impression of the opposite jaw and set the model into the imprints on the bite, and thus arrange the bite in the articulator. If the dentist does not wish to do this, soft wax may next be

placed in the incisive region, the imprints in the posterior regions now acting to guide the jaws, which are closed slowly. Even now we have nothing but the imprints of the occlusal surfaces of the teeth. The jaws are kept close and wax is molded around the buccal and labial surfaces and pressed tightly to the modeling compound. The whole is then chilled with a jet of cold water and removed carefully. The bite when poured will give an accurate view of the opposing teeth except at the palatal aspects, but, provided the imprints of the occlusal surfaces are deep enough for articulation, this will be an advantage rather than otherwise, as the plaster teeth will be stronger for the support at that side.

In extreme cases, where even the film of wax disturbs the act of the patient in biting, plaster of Paris may be used instead of wax for the molar and bicuspid imprints. Then a model of the opposing jaw must be obtained.

The above directions are, of course, for patients who have teeth in at least one jaw. Where all the teeth are missing, I know of nothing requiring more skill than to construct sets of teeth for both jaws which shall occlude properly. The best method is to prepare a base plate and biting plane for the upper jaw, trimming to approximately proper length of the teeth to be set. Then prepare a similar one for the lower jaw, wax the two together, place in the articulator, set up the teeth of lower jaw and make the lower set. Then proceed with the upper as though the lower were natural teeth. There are other reasons why the lower set should be completed first, rather than to attempt to set up two sets coincidentally; but this will be considered when discussing articulation, to which we now come.

#### ARTICULATION.

I think I recall the very first paper which Dr. Bonwill read in enunciation of his philosophy of articulation. I recall that the men in the room were terribly bored, and that many left before the reading was over. The paper was unconscionably long, and for that reason was not published at the time. It has taken nearly twenty years to awaken any great interest in this subject, but to-day there are signs which indicate that the old methods of setting up teeth are to pass and, practically, the Bonwill method to have sway.

The old articulator allows for nothing except a simple hinge action, and teeth set with such an appliance, even though they articulate as do the teeth of engaging cog-wheels, cannot be expected to be serviceable in mastication. If those who have never used one of the two anatomical articulators, the Bonwill or the Gritman, would obtain one and set up a full upper and under denture, using the new as they have the old articulators,—that is to say, utilizing the hinge action only,—a very instructive lesson may be learned. Both sets having been articulated according to the old methods, let the experimenter move the lower set to one side as far as the articulator will permit, and he will immediately discover why so many complaints have reached him, in regard both to faulty mastication and to lack of stability. More than

probably he will find that in closing with this lateral action at its extreme, the canines will be the only two teeth in antagonism, which fact would easily explain a tipping of one or both dentures. Let him then begin grinding, tooth by tooth, with small stones until he obtains good occlusion during all motions of the jaw, and in the end I venture to say that from this single experiment with an anatomical articulator he will have learned more than from all his previous experiences with patients.

I recommend that, when constructing a full denture, the lower should be made first, because it greatly facilitates the grinding necessary to perfect the occlusion, if the teeth of the lower set are so fixed that they can be ground without removal from the articulator. It is the lower jaw, or mandible, which moves, and for this reason and because the overbite is in the upper jaw, the lower set will require the most grinding.

There is practically no set of teeth made by any manufacturer which can be properly occluded without considerable grinding, and this brings me to an intensely interesting fact. Let any one proceed to carefully occlude a full upper and lower denture on a Bonwill or Gritman articulator, and when completed he will discover that their appearance will be twenty-fold more natural than any work he had ever before done. It is not often that patients require teeth at an age when their own organs would have been of normal dimensions; therefore, it is not strange to find that almost invariably, in perfecting the occlusion, the cusps of the canines must be materially shortened. The incising edges of the incisors will all need grinding. The inner cusps of the upper first bicuspid, and the buccal cusps of the lower, will likewise need shortening. The other changes are mainly to be made in accordance with the requirements of the case in hand. Here I may mention another advantage in vulcanite work, of vulcanizing the plate first without teeth. By this means the entire work of grinding for occlusion need not be done when setting up the teeth. The greater portion, of course, should be done to avoid error. Having the vulcanite plate already made, the central incisors may be waxed to it, and then lateral motion of the articulator made. This will indicate just how the cusps of the upper and lower centrals must be ground so as to properly occlude during all movements. The upper centrals are then firmly attached with hard wax. The laterals are then added and ground to occlusion in same manner, and so on throughout the arch. Some slight discrepancies may be observable, but the teeth may be attached to the base by a second vulcanization, after which the set may be returned to the articulator, as it is not necessary to remove or destroy the plaster cast. Thus we have both sets on the articulator in their original positions, and with small stones the grinding for occlusion may be brought to final perfection.

One word about articulation in relation to stability. I think many sets fail because the dentist endeavors to make his patient look young again. Not only is a person's age no disgrace, but, in regard to teeth, their falsity will be only the more apparent as the



result of any effort toward rejuvenating effects. In an edentulous mouth there is little doubt that the arches are smaller than when supporting the natural organs. If the artificial substitutes be made to imitate the original arches, the teeth necessarily must be set outside the ridge, and this produces a leverage which largely accounts for the tipping of many plates. Set the teeth as directly over the underlying ridge as possible, even if you must depart somewhat from the ideal. By this means the plate will be the more satisfactory because of greater stability in conversation and mastication. Moreover, a patient will be far more comfortable than with teeth set on a larger arch.

---

## THE METAL LIGATURE IN ORTHODONTIA.

BY EDWARD H. ANGLE, D.D.S., M.D., ST. LOUIS, MO.

THE introduction of brass wire as a substitute for fibrous ligatures in orthodontia marks a far more important step in the evolution of this science than many might at first suppose. Its great strength, cleanliness, and freedom from stretching are valuable qualities, and contrast mightily with fibrous ligatures. When properly managed, freedom from slipping greatly reduces the necessity for the plain cement bands as a medium of attachment, with the consequent saving of time, inconvenience to the patient, and proportionate freedom from conspicuousness. These are all qualities which will make it more and more appreciated as it is better understood. But a quality greater than these, and one which places it in a class by itself among regulating appliances, is that as a ligature it may be contracted or reduced in size from time to time by an additional twist of its united ends (as in the tightening of the screw in a clamp band), thus exerting much force with the minimum of bulk and material. So it becomes an appliance within itself, as well as an auxiliary to other appliances; and it is destined to render obsolete many of the so-called "ingenious little appliances" which depend for power on small screws, minute springs, or rubber ligatures (such as Dr. Farrar's).

The springing backward and forward of a tooth during its movement into correct alignment is the source of nearly all the pain and soreness experienced in regulating. This most unnecessary cause of irritation is usually due to defective appliances which require frequent removal for repairs, change of form or to intensify force, or for purposes of cleansing. Here, again, is shown the great contrast between the wire and the fibrous ligature. With the former the relinquishment of pressure is but rarely necessary, while with the latter each renewal necessitates the relinquishment of pressure, with the release of the tooth and consequent inevitable irritation. The comparative value of the two kinds of ligatures is easily determined by their use in the same mouth, and the great contrast soon shown.

Experience in the use of this wire in the correction of malocclusion of the teeth will surprise anyone with its many and valuable uses. Its greatest value, however, is probably when used as a ligature in connection with the expansion or contraction arches. This makes a combination which for efficiency and simplicity is unequaled, and which is so universal in its application that it has almost superseded all other devices in the writer's hands. Yet the arch form of appliance would sink to third rate without the brass ligature.

In using the wire ligature, a piece at least one foot in length should always be used, or sufficient to permit a firm grasp with each hand so that great force can be given before making the twist, which should never be more than a three-quarter turn at first. A greater twist will add nothing to the locking qualities, but only interfere unnecessarily with the lips or cheeks. After the three-quarter turn, the superfluous ends should be cut off, leaving about one-eighth of an inch extending beyond the twisted portion. These ends are then bent out of the way, so they will not abrade or irritate the lips or cheeks. In tightening a ligature by subsequent twisting it is best to exert pressure upon the expansion arch and moving tooth between the thumb and finger. At the same time the ligature is given an additional quarter or half twist by means of a pair of pliers with suitable beaks. For this purpose there are none better than the How pattern of crown pliers (straight). Experience in the use of the wire ligature will enable the user to develop great skill, as well as suggest almost limitless ways in which it can be used to advantage.

Its valuable qualities are not limited to the movement of the teeth alone, but are also very useful in retention; for with it teeth may be firmly bound and securely held, either by the wire alone or in connection with other retaining devices. As it is a well-known fact that but little force (if it be constant) is necessary to retain teeth, the wire may be of much smaller size than that used in the movement of teeth,—again reducing the bulk and conspicuousness to the minimum, which is something that is much to be desired and that is greatly appreciated by patients in the long retention of teeth.

After experimenting extensively with different kinds of metals and alloys, the writer believes that a proper quality of brass easily leads all other metals as ligature wire. But it is important that it be of the proper quality and carefully made. Much of the ordinary brass wire of commerce is almost useless for regulating. It should possess to the highest degree the following qualities:

First: Tenacity.

Second: Pliability.

Third: Uniformity and smoothness of surface.

If it be springy, stiff, and harsh, it will break under the strain of twisting, aside from being difficult of adaptation. If the surface be rough and beady (a very common fault) its strength will be greatly impaired.

Three sizes are found useful, the finest being most desirable for retention.

Brass wire of a proper quality is practically indestructible in the mouth. I have seen this metal present a clean, bright, beautiful appearance, after being worn in the mouth for two years.

## PORCELAIN ENAMEL.

BY N. S. JENKINS, D.D.S., DRESDEN.

**I**N a most interesting and instructive article, entitled "Porcelain," by Dr. Geo. H. Wilson, published in the DENTAL COSMOS for October, 1901, occurs the following paragraph:

"Dr. Jenkins claims to have produced a low-fusing material in which the tendency to become porous and change color in the mouth has been overcome. Is it not asking too much of a learned profession to accept a statement contrary to supposed facts without giving a scientific reason for the assertion? The appearance of mysticism for commercial purposes should not be tolerated by any profession."

When I began my experiments, some ten years ago, I soon discovered that very little was *known* of the composition or treatment of porcelain, in any published works. Much was surmised and many formulæ of little practical value were given, but the important points concerning the production of porcelain for dental purposes were not obtainable. The secrets of manufacturers appeared to be as much bound up in the methods as in the materials employed, and the most exact formula might be most misleading to him who possessed no knowledge of the means employed to reach the final result. After a time I became convinced that the relatively large proportion of quartz and kaolin used by American manufacturers of artificial teeth had been chiefly employed for the purpose of preserving form, and not primarily for strength. The power of resistance which the tooth possessed appeared to be due to its feldspar and flux alone. The seemingly greater strength of the English tooth (except for the frequent weakness of the platinum pins in the less modern product), and its density, which permitted grinding and repolishing to so great perfection, decided me to take the Ash tooth for my model. Through the courtesy of Messrs. Ash and Sons, which I am happy here publicly to acknowledge, I was able to obtain the same feldspar which they used, and, for many purposes, I found it unsurpassed.

The task I set myself was to obtain a material which could not only be fused below the melting-point of gold, but which should be unaffected by the warmth and moisture of the mouth, and strong enough to withstand the force of mastication. It was evident from the beginning that the infusible elements must be reduced to a minimum, and that all the ingredients must be treated so as to bind them into a practically homogeneous mass.

As stated it seems like a tolerably simple proposition, but seven years of unremitting labor were not too many to obtain the perfected product. Incidentally, machinery and methods had to be



invented. Innumerable experiments, often involving such minute quantities as the hundredth part of a gram, and combinations which could never be worked in large quantities, were found unavoidable.

Even after this labor, in which I had the assistance and advice of some of the first chemists and experts in Europe, was completed, I found that the manufacture of the finished product could only be carried on with the exactness and, for the most part, in the small quantities of laboratory experiment; for the excellence of the material is even more largely due to the complicated methods of its preparation, for which a high degree of skill and much experience are necessary, than to the ingredients themselves. Therefore no formula and no description of the process which I could give would be other than misleading. Not "commercialism,"—although I cherish the hope that my expenses may yet be reimbursed to me,—but the firm resolve not to have the result of so many years' thought and labor brought into disrepute through the debased imitations which would be sure to follow so unnecessary a confidence, confirms my intention to keep my own counsel for the present.

Let us take, instead of "supposed facts," the analogy of the metals. Lebedur says ("Die Legierungen in ihrer Anwendung für gewerbliche Zwecke," p. 48): "Not seldom does an alloy possess a greater specific gravity than any of the metals of which it is composed." We know, in the case of gold and platinum,—the two metals with which we are best acquainted,—that by cunning combination we can fit them for any purpose we have in view. We add to either the one or the other a certain proportion of metals which melt at a lower temperature, and we obtain an alloy with a hardness and power of resistance which the pure metal did not possess. We have not only preserved the good quality of one metal, but we have added to it the good qualities of others. That the alloy melts at a lower temperature than the metal which formed its base is often an incalculable advantage. It is exactly this which I have accomplished with porcelain enamel: a greater specific gravity, greater power of resistance, a more perfect adaptability to our requirements, and fusibility at a lower temperature. The material is so hard that it should always be mixed on an agate slab, since it will scratch and roughen either glass or porcelain, leaving a surface which cannot easily be kept clean. When expertly fused its porosity is reduced to insignificance, and, instead of discoloring or disintegrating in the mouth, it is the only inlay material which can be ground and polished with the certainty that it will indefinitely maintain its integrity.

My experiments have brought me, in every point, to very nearly opposite conclusions to those enumerated by Dr. Wilson at the end of his able article, and the accompanying report may indicate with what justice. In platinum matrices, formed on a die that they might be identical, one centimeter square and two and three-tenths millimeters deep, specimens of six high-fusing bodies were fused, by Dr. W. A. Spring, of Dresden, who is well known as an expert in high-fusing work. These specimens, together with six similar blocks of porcelain enamel, were sent to Professor Kayser, the

distinguished head of the Royal Saxon Institute of Building Technology, to be tested for specific gravity, for resistance to pressure, and for toughness,—if, indeed, so brittle a material as porcelain can be said to possess this last quality. The tests required ten days' time, extending from January 20 to February 1, 1902.

The following is a translation of the official report:

RESULTS OBTAINED FROM THE EXAMINATION OF DIVERS PORCELAIN SPECIMENS,  
AS TO THEIR SPECIFIC GRAVITY, RESISTANCE TO PRESSURE, AND DEGREE OF  
BRITTLINESS.

(a) *Specific Gravity.*

(1)	The brand	"Close"	2.223
(2)	"	"Close-Whiteley"	2.249
(3)	"	"Whiteley inlay"	2.225
(4)	"	"Whiteley special"	2.171
(5)	"	"Consolidated inlay"	2.267
(6)	"	"Consolidated continuous-gum"	2.132
(7)	"	"Jenkins porcelain enamel"	2.332

(b) *Resistance to Pressure.*

(1)	The brand	"Close" average from two experiments.	712.5 kilograms.
(2)	"	"Close-Whiteley"	225.0 "
(3)	"	"Whiteley inlay"	430.0 "
(4)	"	"Whiteley special" av. from two experiments	787.5 "
(5)	"	"Consolidated inlay" av. from two experiments	460.0 "
(6)	"	"Consolidated continuous-gum"	520.0 "
(7)	"	"Jenkins porcelain enamel"	924.0 "

(c) *Degree of Brittleness.*

If we consider No. VII as representing the highest degree of brittleness, and No. I the lowest, the order of the various brands will be as follows:

VII.	The brand	"Close-Whiteley."
VI.	"	"Whiteley inlay."
V.	"	"Consolidated inlay."
IV.	"	"Consolidated continuous-gum."
III.	"	"Close."
II.	"	"Whiteley special."
I.	"	"Jenkins porcelain enamel."

(Journ. No. 4251 & 66.)

(Signed) PROF. KAYSER.

DRESDEN, February 3, 1902.

Royal Saxon Institute of Building Technology—  
Testing Department for Materials.

## SOME EXPERIMENTS WITH TRICHLORACETIC ACID.

BY DR. CHARLES E. DRUMMOND, OSAGE, IOWA.

(Read at the thirty-eighth annual meeting of the Iowa State Dental Society, Clear Lake, Iowa,  
May 21, 1901.)

**R**EALIZING that trichloracetic acid as a dental medicine is perhaps not a new remedy to many of the dental profession, it was with some hesitation that I decided to write upon this subject. But as I had been successful with its use in the cases that I am about to describe, I wanted to tell others something of its merits.

Trichloracetic acid ( $C_2HCl_3O_2$ ) is obtained by the action of

chlorin on glacial acetic acid, or by the oxidation of anhydrous chloral by means of fuming nitric acid. This acid belongs to a group of three, all having similar properties. The other two are the monochloracetic and dichloracetic acids. All of the chloracetic acids are powerful caustics, destroying the epidermis. The mono- and tri-acids are solid crystalline deliquescent bodies; dichloracetic is a colorless liquid having a suffocating odor. Trichloracetic acid occurs in colorless rhombic crystals, very soluble in water or alcohol.

My first experiment with trichloracetic acid was in the mouth of a young man, who came to my office with the determination of having all of his teeth extracted. Upon examination I found some of the teeth in a very bad condition; not only were they badly decayed, but the two central incisors were abscessed, and had been in that condition for about two years. The teeth were very loose, and the apical foramen had become so enlarged that an instrument could be run through without difficulty. I treated the two centrals, without any apparent effect, with all the known remedies that I had at my command, and then, as I had read something concerning the value of trichloracetic acid, I resolved to try it.

Owing to the antiseptic, caustic, stimulating, and astringent properties of trichloracetic acid, I could readily see its value in such a case as the one I had on hand. I found from the first treatment with this acid beneficial results, so I continued treatment for nearly a month. After that time the teeth had become firm and the gum tissue presented a healthy condition. I carefully filled the root-canals with chloro-percha and canal points and crowned them. That was done one year ago the first of June, and the roots and gums seem to be in a perfectly healthy condition.

My next trial was in the mouth of a young lady suffering from pyorrhea, who had abandoned all hope of saving her teeth. The teeth were all loose in the sockets, the gums highly inflamed, and the patient had not been able to properly masticate her food for some time, consequently she was much debilitated and weakened from lack of proper nourishment. Previous to coming to my office the patient had had a number of her teeth extracted, so that in order to have proper mastication surface she would either need to have bridge-work inserted or have her teeth extracted, and full upper and lower dentures inserted.

We chose the former method. My success was more than I had dared to hope for. I first removed the deposits by the use of scalers and cleaned the teeth thoroughly. This of course is very essential no matter what the treatment is. I then applied the acid, working it well down into the pockets, and around the teeth. At the next visit quite a marked improvement could be seen in the condition of some of the teeth, while in others there had not been much change. On investigation, I found remaining some deposits, which I removed and again applied treatment; this treatment I followed up persistently until the gum tissue presented a perfectly healthful appearance, and the teeth had become so firm that I could attach bridge-work, which was successfully done. The patient has ceased taking medicine, has regained her health and also gained an abundance of flesh.



In another case of pyorrhea, which was an apparently hopeless one, in the mouth of a gentleman about fifty years of age, the patient said he had tried nearly everything known, except trichloracetic acid, without success. The disease in this case was of many years' standing. The same treatment was followed in this as in the preceding case, and there seems to be a complete cure.

Also other cases of minor importance.

In treating a spongy condition of the gums the acid should be applied to the gum by means of an orange-wood point wrapped with cotton. Or where a cavity is filled up with hypertrophied gum tissue, the acid applied in the same manner will remove the tissue without pain to the patient and without bleeding.

Trichloracetic acid has also been recommended for the removal of gum tissue from troublesome third molars. I have never tried it for that purpose, but should think it would be valuable. I have successfully used it for canker sore mouth, which is at times very troublesome and painful. One or two applications will usually be sufficient. In these cases I use the pure acid in small quantities.

In cases of pyorrhea we often find bleeding gums troublesome when removing deposits from the teeth. A small piece of cotton saturated with the acid placed in the pockets of the gum for a moment will prevent bleeding, and we will be enabled to do our work much better. If a stimulating antiseptic effect only is desired, use 2 to 5 per cent.; escharotic or solvent, 10 to 90 per cent. There are no systemic effects from the local use of trichloracetic acid, but over 50 per cent. it should be used with care, and the surrounding tissues protected. It can be used all the way from 10 to 90 per cent. in the pockets of pyorrhea, according to the results desired.

---

## CLASS-ROOM METHOD OF TEACHING.

BY ROBERT H. NONES, D.D.S., PHILADELPHIA.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa., December 31, 1901.)

**H**OW best to teach dentistry so that the greater number will be both interested and benefited is a much more difficult question to-day than in former years, due possibly to the increased number of students, and greatly on account of the addition of many more theoretical and scientific subjects. The purely theoretical lectures will not meet the requirements. It would seem that the lectures were almost supplementary to the clinics and demonstrations, so much benefit being derived from the latter.

One individual could hardly give a proper recognition to the entire course and at the same time systematize both lectures and practical demonstrations so that the perceptive, intelligent student could be as advantageously instructed as his weaker classmate. But the combined thoughts of many, collected from careful observation and association with the student, naturally would be the best method of solving the problem.

Careful systematizing of methods, division of classes into sections as well as thorough instruction of demonstrators, instructors, and lecturers by the professors of the various chairs, always maintaining a very close and friendly relationship between professor, instructors, and students, permitting absolutely no barrier between them,—the one thought being entirely, Who can best benefit or be benefited, and how?—is the first step toward a successful result.

Why were so many of the older practitioners such successful dentists? Principally, because of their tutelage under preceptors who commenced with them at the bottom of the ladder, in laboratory work, and by practical observation and appreciation gradually made them masters, not only of the mechanical aspect of the piece in hand, but gave them as well a thorough knowledge of the make-up and use of the materials, tools, appliances, etc., of which and with which it was made. The learner became so familiar with dentistry at the bench that operative dentistry came as a natural consequence, and he could almost teach himself; in contrast, I might say, with the desire of many who have entered upon the study of the profession in later years (beginning at the top of the ladder!), to work at the chair and gradually go downward toward the foundation. Such a course is rarely successful toward the making of a thorough dentist. As a general rule the student who attempts to learn the operative branch first, at the sacrifice of the prosthetic, rarely becomes a good mechanic; but those who begin at the beginning,—the bench with all its pleasant or unpleasant surroundings, according to the man (contrary to the mistaken idea possessed by many who begin where their tutors left off with fashionable practices),—almost invariably become good all-round dentists.

Those of us who have seen the past method of teaching, when the student usually entered a laboratory for a few years preparatory to college, cannot but question, Are we to-day making as good practical men, or do we sacrifice some of the practical for the theoretical? It is a matter of grave importance not only to teachers but to the coming generation of dentists. We must at this enlightened day have theorists; how much, if any, of the practical side can be sacrificed, or what happy medium can be reached, is the problem.

If all the colleges were so fixed financially that applicants could be received or rejected at the judgment, say, of the teacher or teachers of operative and prosthetic dentistry, I unhesitatingly affirm that the successes would be more numerous and the failures less, because they would naturally select students endowed with mechanical instincts, and who being thus armed would be better prepared to acquire theory.

What chance would a prospective student have who had never as a boy driven a nail, sawed wood, or made his dog a house? Given students with mechanical ability, we can make dentists; without it, failures. We may be mistaken, however; manipulative ability can be acquired, but it is the exception rather than the rule.

How best to teach in colleges having crude untrained material, with, in many cases, absolutely no instruction from preceptors, in order that many, instead of a few, may be benefited, will tax the brain of the most experienced teacher. One assuredly feels, however, that if started with a proper foundation and agreeable surroundings, the work will not only be interesting, but a pleasure to perform. So in teaching, the student at the beginning should be brought to a thorough knowledge of the laboratory and its equipment, not only theoretically but practically, the instruction never being entirely by lectures, but rather the reverse as far as possible,—by practical demonstrations.

The lecturer cannot get too close to the student, in fact he must be demonstrator as well as professor. Greater interest is retained by not leaving the practical side entirely to the demonstrators or assistants. The student should be thoroughly taught theoretically how it is done, and practically how to do it.

Sectioning off classes cannot be too strongly commended,—strengthening the student where weak, and making him stronger in those points which he seems particularly able to grasp; also advancing the capable and holding back the tardy until proper proficiency has been attained; but the advancing of the student from one step to another before he is thoroughly trained should be condemned, although to give him proper encouragement is very essential.

I have had increased success by following up lectures on prosthetic dentistry, within the next day or so, with demonstrations, the students duplicating as closely as possible the work performed,—all requirements being personally made before the student, giving him much better instruction than it is possible to obtain from lectures, or from finished or partially finished work on models.

Too much praise cannot be given the lantern method of teaching in all branches in which it is practicable, and it *is* possible to some extent in all. In order to realize how much students can be benefited by this method, we have only to reflect how much better we grasp the words of a speaker when able to see the subject placed in a picture.

To set aside part of the lecture-hour for quizzing will be found to be advantageous not only to the student, but to the teacher as well, giving him an opportunity to find out whether his teaching has been clearly and correctly understood, and to set right those who may have misunderstood or who were not clearly impressed.

Many of us forget that it is impossible to make our subjects too plain or simple for the comprehension of the general student body. We are too apt to talk over the heads of our listeners; we should always endeavor to have each individual leave the room feeling that he has been benefited in at least one point.

The teacher who has the ability to draw, and thereby illustrate his lectures or talks with sketches, can not only clearly impress but interest his class, as well as hold their attention. This method is much to be preferred over that of presenting old diagrams



brought out year after year, and which have become monotonous to both teacher and student.

The more demonstrative are the teachings, the better the students are able to grasp them, and the more enthusiasm displayed by the instructor the greater will be the interest of the class, particularly in those subjects which so many feel have no direct bearing on dentistry.

A systematic course of lectures, each followed as far as practicable with clinics and demonstrations, will be productive of much good; as, for example, in operative and prosthetic dentistry each lecture should be followed with clinics or demonstrations,—the chair of pathology and therapeutics affording an excellent opportunity for sectioning off the class for practical demonstration in the infirmary of the college.

Surgery offers a course, particularly with work upon the cadaver, which is not fully appreciated; the students should assist in and perform such operations as are calculated to be of special interest to the dentist.

In anesthesia and anesthetics, they should not only be shown and assist in the actual demonstrations, but be allowed to perform the various methods; in this connection a thorough course on physical diagnosis with practical demonstrations in which the student should take part, will do much to correct the ignorance displayed on this subject, and protect patient and operator as well.

So with the various other subjects,—practical demonstrations, close association between the instructor and instructed, encouraging and enthusing the student to a thorough conception of the truth that "What is worth doing is worth doing well."

With the coming four-years course an opportunity will be afforded the teacher for a still more thorough course of demonstrations, and the way opened for the better teaching of particularly the practical branches.

---

## A TEST TUBE FOR STERILIZING EUCAIN SOLUTIONS.

BY DR. JOSEPH H. NOBLE, PHILADELPHIA.

**E**UCAIN solutions can best be sterilized by boiling in a test tube immediately before using. It should of course be taken directly from the test tube by the syringe, otherwise it is likely to become contaminated. The test tubes supplied by dealers are poorly adapted to this purpose for the reason that those large enough in diameter to admit the syringe are so deep that the point of the needle does not reach the bottom by about one inch.

Test tubes can, however, be readily shortened as follows: Cut off the desired length from the top with a glass-cutter, or by making a ring around it with a file. Then heat the newly cut edge in a strong Bunsen flame until it is a dull red, when the glass will be soft and the flange can be formed by placing a piece

of cold steel (an old excavator handle will do) in the mouth of the test tube at an angle of about  $45^{\circ}$  so that it rests against the side of the opening, the end touching the opposite side of the test tube about one-half an inch below the opening. Now, by rotating the test tube with the left hand and pressing outward on the steel with the right, the flange will be formed.

Several heatings may be necessary.

---

## CORRESPONDENCE.

---

### A REMONSTRANCE FROM INDIA.

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—During the present month there have been two American and one English ladies in my office who before coming to India were persuaded by their dentists to have many teeth extracted "because they could not get dental work done in India." One was a Philadelphia lady of twenty-four, whose dentist is an ethical practitioner. He removed all of her teeth and she is now experiencing the joys of full upper and lower dentures. The other American was from Montreal. All her upper teeth were taken out five years ago; she is now twenty-six, and wears a full upper set.

So the story goes. Nearly every week some patient says, "Oh, my dentist told me I couldn't have my teeth seen to, so he took them out." Oftentimes patients present themselves with mouths very much neglected, and on being told of the condition, say, "Oh, Mr. or Dr. So-and-so said my teeth would be all right for seven years, or until I returned home." One does not and cannot blame the patient for neglect under such circumstances.

Now, sir, on behalf of the English and American people who come to India, and for the enlightenment of our professional *confrères* in the U. S. A. and Great Britain, let me say that in all the chief cities of India, Ceylon, Burma, and the Straits Settlements there are reliable English and American dentists who are working as faithfully and serving their patients as well as the rank and file of practitioners "at home"!

In conclusion, may I sound a note of warning? Teeth of Americans and Europeans go very rapidly in India, especially during the period of acclimatization and in those subject to fevers. Therefore, dentists who know that their patients are coming to the tropics should insist that they see a dentist at least within six months of their arrival in the country.

Yours faithfully,

J. W. EGBERT, D.D.S.

MADRAS, INDIA, January 21, 1902.

## PROCEEDINGS OF SOCIETIES.

## IOWA STATE DENTAL SOCIETY.

(Continued from page 272.)

SECOND DAY—*Afternoon Session* (continued).

AFTER the reading of the three papers upon "Cavity Preparation" (those of Drs. Wm. Finn, W. P. Galloway, and W. W. Vance), there ensued the following

*Discussion.*

Dr. B. C. HINKLEY. Dr. Finn has certainly covered the larger field of cavity preparation in a concise and interesting manner, and I fully indorse the general plan of scientific and mechanical principles as outlined by his description and illustrations. The idea of controlling caries of the teeth by cavity preparation is certainly the true one. Our progressive teachers have realized this fact, and are now considering the chair of operative technique as one of the most important branches of the whole curriculum of the dental school.

Dr. Finn has carried us along through the subject, describing the general classes of cavities, giving a detailed description of the method of procedure in each cavity in the classification, the proper use of instruments, separation, and other preliminary steps necessary to secure the best results have been pointed out; extension to remove the predisposing causes of recurrent decay; the mechanical principles of outline involving sharp angles and flat walls to secure the best possible conditions for wedging gold against the walls of the cavity to prevent leakage and movement of the filling.

The margins are to be beveled both at the dentinal and enamel surfaces to prevent chipping by protecting the edge with gold and at the same time assist in holding the filling more securely and leaving the smallest amount of enamel possible unsupported by dentin. Approximo-occlusal and step cavities have not been overlooked. The weak points of the tooth are to be strengthened by cutting away cusps and incisal edges and replacing with gold in such manner that the comparative strength of the tooth and filling will be equalized as far as possible.

All of these various points have been clearly stated, and it would be useless for me to give further emphasis to them. There are always good thoughts unexpressed upon any important subject, otherwise there would be no interest in the discussion. In this connection I will refer to a few observations and experiences in practice to bring out a few practical points not fully brought out by the essayist.

The methods of extending the cavity to prevent further decay and the formation of steps and wedge-shaped outlines to prevent displacement of the fillings are certainly principles which control



the cause of the majority of failures due to unskillful manipulation, but there are enough failures to discourage the most of us even when a reasonable observance of these methods has been followed out. A careful study of my failures in large contour work has convinced me that occlusion plays a very important part in securing permanent results in these fillings, as the fillings are forced away from the walls by repeated impact of mastication.

Are we not justified in extending the cavity to prevent displacement by securing proper occlusion? For instance, if the occluding tooth or cusp be left so that the contact-point is at an angle to force the filling away from its retaining base instead of against it, or if the point of contact be at the junction of the filling and tooth. This leverage can often be reversed by extending the cavity to just such an extent into the occlusal surface of the tooth that the wedging force of occlusion may apply favorably instead of tending to displace the filling.

This tendency of change in position of a filling is necessarily more marked where non-cohesive gold is used for the base or cervical third in approximal cavities of bicuspid and molar teeth. Incisors and canines could not be treated by this rule, but relief from undue strain can only be avoided by extending the incisal edge far enough to give sufficient thickness to the filling and yet not change the occlusion so that it assumes more than its share of the stress brought about by movements of the jaws.

If these thoughts with reference to occlusion be true, the best results can be obtained only by careful examination of each tooth to ascertain as nearly as possible what degree of strain the filling must stand, and making the preparation with a view to avoiding as far as possible any undue leverage from points of occlusion.

There has been no special distinction made by the essayist between vital and pulpless teeth in cavity preparation, and as the subject generally includes all classes of teeth I would like to add a thought in this connection as an item for general discussion.

My opinion is that a pin cemented in the root of the tooth simplifies the preparation and gives to the filling a more natural and secure anchorage than can possibly be obtained from any other method. The expression "natural anchorage" implies that there is a connection established between filling and root that relieves the stress of occlusion from the filling and conveys it to the root. In this manner the filling becomes a part of the whole tooth and resists the force of occlusion very similarly to that part of the crown remaining intact with the root. Another very important item, as it seems to me, in this connection is in the economy of tooth-structure and the avoidance of the objectionable features of a step in the anterior teeth.

There is not the slightest need of undercuts or right angles in the cavity outlines to secure the filling. The dentin which has been wasted by caries or removed by the operator to gain access for treatment can be replaced with cement, at the same time strengthening the part remaining and improving the color of the tooth.

I will not take up more time in opening the discussion, as there

are many valuable points gathered by more experienced operators which I am sure will be interesting, and I hope that the subject as presented will bring out the general discussion that it deserves.

Dr. BELDING. I have not thought enough of this subject to enter into it in a satisfactory way. Ever since the very interesting and scholarly article by Dr. Black appeared, I think in 1891 or 1892, there has been a good deal written and said regarding the preparation of cavities with a view to preventing recurrence of decay, and I think all of us are working along that line; yet, on the other hand, a great many men do not understand the principles rightly and are perhaps overdoing,—cutting too much of the tooth away and thereby weakening it. While there are many men who cut too much, undoubtedly there are men who do not cut enough, and if we use judgment in the selection of our cases, knowing the structure of the tooth, it seems to me a tooth that requires gold would require the method of preparation as laid down by Drs. Black, Johnson, and such men as we have seen operate here at the clinics this morning according to this principle.

Dr. PHERRIN, discussing Dr. Vance's paper particularly, said: I have an especially hard subject to discuss and have not had sufficient time to harmonize some of the statements Dr. Vance made; I fear I never shall have, and I hope I never shall,—I dislike to see this matter of compensation brought out so plainly. One particular point he emphasizes is that we need to be thorough; we want to be satisfactory and do conscientious work. Now, I take direct issue with that point in his paper, because I say we cannot do conscientious work or thorough work unless we cut back the margins beyond the point where we will have enlodgment of the food. We cannot leave these little pockets along the margin of the filling. Unless we cut that cavity back as has been described in these papers,—that is, simply following out the idea of Dr. Black and other teachers along that line, we are not doing conscientious work. If we are not going to do that we must class our work somewhere else than with conscientious work; we cannot so call it. The doctor will excuse my taking issue with him on the point, but as he said "I am nothing if not sincere," I really cannot believe he advocates lack of thoroughness, as his paper read, or I misunderstood it. But he says we are too far ahead of the public. I want to keep ahead of them, and to keep a pull on them at the same time; I want to educate them as much as possible. You understand what I mean by pull. I want them to follow up right after the profession just as fast as they possibly can, and I would like to see that work, of course, carried on a little more rapidly, but we will have to put up with doing what we can. He says the public do not appreciate this work sufficiently. They never will appreciate unsatisfactory work or work that is not thorough, and the more thoroughly we do our work the greater and more thorough will be their appreciation. The greater their appreciation the greater the remuneration and so on. I believe if we lag in the matter, the public is going to lag; they expect us to keep ahead. Our profession or our title is "Doctor of Dental Surgery," and in the beginning it meant teachers

of dental surgery. We are teaching the public; we must teach them the necessity of our operations. I believe we must keep on the climb. In speaking along the line of compensation, I didn't exactly understand what was meant in regard to being a failure unless the dentist was generously compensated; I presume the meaning was a success to the dentist at that particular time. I have seen much good come from a case where I knew I did not receive what we call compensation at all at the time. I know of one particular case where I used up seven burs in excavating a cavity, and two of them were enamel burs. It was one of the hardest teeth I ever tackled, and of course, as he said, the ordinary fee was a dollar. I don't know where I was compensated. I know there was a lot of hard work, and the burs were not any good after I got through, and I could not very well count up the cost of the amalgam filling, but I know I didn't think there was any compensation for all the work. It was a good long operation, but that was a patient that would appreciate the work. As I go along I have often been asked if I give a full course in dentistry with each piece of work. This patient was appreciative, and could understand the reason why it was cut backward in that way, why crosswise or under the margin, and just a short time after this the patient brought a friend in; he described to his friend the way the filling was put in, and I believe that patient was appreciative right from the start. In some cases we do not have to wait very long. I believe there was a remuneration, but, if I made nothing out of the second operation, this thing spreads, and we are the ones to spread it.

Dr. GORMLY. I will ask Dr. Wedelstaedt to open the general discussion.

Dr. WEDELSTAEDT. I have listened with much pleasure to the reading of the last paper. Had I known this subject was to come up this afternoon I should have tried to have gotten here earlier, but it is not too late to say a few words which I trust will clear up one or two things.

One of the speakers referred to the work of the late Dr. McKellops. He was my friend, and was a very good operator. God rest his soul in peace! is all I can say about him at this time. The same gentleman also spoke of the late Dr. Marshall H. Webb and the late Dr. Geo. H. Cushing. Dr. Cushing, like Dr. McKellops, was my friend, and I revere his memory as few know. These three men were honest and upright dental practitioners, and they did much more for us than we at present realize. They developed the conditions up to and beyond their time, and they filled teeth according to the knowledge of these conditions; but we are not here to discuss these men nor their work, much as we may admire them. We should remember that we are a young profession and that our knowledge is constantly developing. We do not know very much, for we are just beginning to be able to see a little. A few men are laboring for more exact knowledge and for more exact methods, and a few have tried to make use of such definite knowledge as has been ascertained and thus establish some definite methods. When we take into consideration the advance that has been made during



the last fifteen years we cannot help but be astonished. Those who have not kept posted regarding this advance continually call attention to the work of twenty or twenty-five years ago, ignoring completely all that has been done from that time to this. I think it is because I have tried to put myself in the knowledge just spoken of that the term "extremist" has been applied to the methods to which I have called your attention. Now, the moment a man deviates in the least from a well-beaten path some misunderstand and condemn him. I do not feel that I am an extremist. When a patient comes to me with a cavity in the approximal surface of a molar, I do not remove the entire approximal surface of that molar; nor do any of the followers of Dr. Black do anything of the kind. That cavity is prepared with some knowledge of the conditions that exist in that particular case. If susceptibility is present, we at once know that the areas of liability to recurrence of decay should be included within the outlines of the cavity preparation. If this be not done, we are very certain that recurrence of decay is but a question of time. Our attention has been called to these areas of liability to recurrence of decay, so all a man has to do is to observe and compare the conditions with which he daily meets to know whether or not extension for prevention is a fad. We should study each case that comes to us, study the conditions of the decay as it exists in that mouth and compare these conditions; that, I feel, is what devolves upon us. It is not how much work we do,—that is not the point. As I have said so many times, it is not how much we do, but rather how well it has been done. I kindly wish to impress that fact upon your minds: *how well* the work has been done. It is our duty to study the conditions involved in each case, look the teeth over very carefully, study the character of the decay, the general environment of the tooth, the gums, and the occlusion. When fillings are to be made we should ascertain as much as possible about the occlusion of the teeth, so that we may acquaint ourselves fully with the work we are about to do; if this is not done we are not in a position to do our work with that intelligence that should be a characteristic of our profession. One point too many men overlook is this,—that we are intelligent men in a progressive calling.

Something has been said regarding the matter of occlusal anchorages, that I supposed had long since been settled for all time. I am unwilling to discuss that special feature of the gentleman's remarks, and will merely say that recently Dr. Black called my attention to some thirty-five sections of upper bicuspids. The occlusal surfaces of thirty-three were more or less decayed. I, therefore, feel that we are not only justified in cutting our anchorages at right angles to the cavity proper, but that it is the very best thing for the patient and the salvation of the tooth. I believe, further, that we are always justified in sacrificing as much tooth-substance as necessary for the stability of our filling.

I agree with the gentleman when he says that there is little appreciation shown by the laity for conscientious dental services rendered; that is, I partly agree with him in the remarks made. Those who have had poor dental service rendered them, have found it out,

and then have had the work done properly, know the difference and appreciate it, and these same people are the very best advertisements anyone can have. If we would but do our work with this thought ever before us, "I will make this work for this patient just as I would wish it made for myself," there would be no necessity for me to say anything to you about the public appreciating dentistry which has been honestly done. The subject is too broad and comprehensive for a talk of an ordinary kind, but I feel that enough has been said, and I desire to thank you for your close attention.

Dr. BELDING. I think it is unfair to Dr. Finn to pass his paper without complimenting the doctor on his work and the drawing. It is his own original work and I think he should continue it. He should continue the work, but I think he is at fault in some of the particulars in the models, although they are highly commendable. We should bear in mind that we cannot become operators like Dr. Wedelstaedt, but it is right and proper that we have such operators to inspire us to do better work. Failures come to us many times, and many men who are doing beautiful work to-day learned that, and we are benefited by the experiences of these men.

Dr. LEWIS. A word in regard to the first gentleman's paper. I appreciated it very much, it was excellent, but there is just a word of correction in regard to the models passed around. Nearly all were incorrect to a certain extent, in that while his walls were cut parallel, the depth of his step was insufficient; it was not cut through the enamel to the dentin,—in other words, the filling would be anchored in enamel instead of dentin.

A word in regard to the second gentleman. His paper I may be a little harsh with. First, I want to call his attention to his remark as to the use of burs; he said the inverted cone was of no use except to remove an alloy filling,—always use a round bur. I think if the gentleman would turn this around it would be better,—that round burs were of no use or value except to remove an alloy filling or open a pulp-chamber. The inverted cone is indispensable in the Black preparation; the round bur we could get along without.

Second, his statement in regard to the use of sandpaper disks upon the enamel margin. Never under any circumstances use a sandpaper disk on any enamel margin! it polishes the margin, and gold will not lie close to a polished margin. I know that a good many practitioners do that, but it ought not to be done. You say, Why not, if I use a coarse sandpaper disk? In using a coarse sandpaper disk the margin will be full of furrows or ditches, and, in less than twenty-four hours after the filling is inserted, secretions are working into the tooth. What shall we use? Take a chisel, one that is sharp (never use a chisel but once without its being re-sharpened) and plane your margin and you will have tight adaptation.

Lastly, I want to call the gentleman's attention to his remark about leaving soft decay over the pulp. I was surprised, because I did not think that any man at the present time would advocate that and tell us that it would recalcify. It never would recalcify, it never did recalcify, and it will not recalcify to-day. Soft decay in a tooth is decayed material, and it will always stay decayed material. Let

us look back a few years,—back to the “American System of Dentistry.” That book will tell you just what he said, Leave a leathery mass over the pulp and it will recalcify. The old practitioners of dentistry will tell you the same. The practitioners of to-day, what do they say? Remove every particle of soft decay,—remember I put emphasis on the word “soft,”—remove every particle of soft decay, even though it exposes the pulp. A few of you may say, “Dr. Johnson does not believe that.” Dr. Johnson makes the remark, and it is used in his writings, to “remove every particle of soft decay,” but the doctor has a peculiar way of smoothing things over and he tells us a little later that sometimes he leaves a little part of decay over the pulp if he thinks best, but if you go to Dr. Johnson and ask him, he will say, “No, I remove every particle of soft decay.” That one part of his book I cannot understand.

You may say, Why do you remove all this soft decay? why will it not recalcify? Soft decay is dead material; did you ever hear of anything that was dead coming to life again? We remove all this soft decay because it is packed with micro-organisms and filled with poison. We may destroy the micro-organisms, but we are not sure that we have destroyed the poison. Seal up soft decay in a tooth and the result is toxalbumin, or poison-albumin, and it penetrates to the pulp and the pulp dies. How many of you have placed cement fillings in a tooth over soft decay and then made the remark, “I had to use a cement filling as the tooth would stand nothing else.” The patient would return in five or six months with an ulcerated tooth. How much better it would have been to have removed this decay in the first place; if the pulp had been exposed, capping it or destroying it as you saw fit. In saying I always remove the soft decay even though it exposes the pulp, I do not mean to carelessly expose pulps; no one should expose the pulp if he can safely avoid it, but I prefer to destroy the pulp myself than to let nature do it through my carelessness.

Dr. SEARLES. In cavity preparation for the filling of the teeth, the first consideration that comes to my mind is, What do we fill them for? What is the object? Now, do patients come to us with the idea of having teeth filled for pleasure, or for the purpose of saving the teeth? It is for saving the teeth. We should by all means remove the conditions that produce the decay, if in our power. To do that, in my mind, there is no better way than by the extension of a cavity margin into self-cleansing territory. I know of no better way to make fillings that will resist recurrence of decay.

As for the “extremist,” I don’t believe there is ever a reform without a crank. We have got to have an extremist in order to have reform. Dr. Wedelstaedt is no more of an extremist than was Dr. Black and many others, but he believes what he says and is inducing a great many others to believe the same thing. The greatest wish that I have is that I might be able to so express myself that I could induce all of you to think as Dr. Wedelstaedt does in regard to the preparation of cavities for the filling of teeth.

Dr. GALLOWAY. A word in defense. In regard to the preparation of cavities I was criticized by Dr. Lewis, first in regard to



the common bur. That is a matter in which we have extremists; no two operators use the same instruments; some choose one, some another. Now I am a crank on the round bur; he is a crank on the inverted bur. I will state my reasons for using the round bur. When I made that statement I expected it would be taken up, knowing that many prefer the inverted cone bur. In placing fillings we use the round burnisher in amalgam, and we use the round plugger point in our gold work,—at least I do. The round bur has the same form as the round point. You cannot place amalgam or gold as perfectly into acute angles such as an inverted cone bur makes as you can in a groove made with a round bur. That is my reason. In discussing the preparation of the margin he says, "Don't use a fine disk, and don't use a coarse one." He takes a very fine disk or a very coarse one; he goes to extremes again. I said in my paper, Use a coarse disk. I did not mean one so coarse that it will leave ditches, but a medium coarse disk rather than a fine one. We know the result of a medium coarse disk on the enamel; it leaves the surface not perfectly smooth, but one against which the gold will be packed perfectly. The doctor says we must remove all decay. You will remember I said we should leave the leathery decay; we should not remove all decay if of a leathery kind. This should be treated antiseptically and it will recalcify. I wish to say it will; I do not know whether it will form toxalbumin, but I do know it will recalcify,—I have seen cases. I am not a very old man, but I have seen cases where it has recalcified, and I refer you to Dr. J. Foster Flagg. Dr. Flagg will tell you the same thing, and I don't think there is any man that stands better before the profession than Dr. Flagg. He is another extremist, but what he said years and years ago is true to-day. I expected somebody would call me down for leaving decayed dentin,—that is, softened dentin,—but, as I mentioned before, my paper is from a practical standpoint rather than a scientific one, and my experience is that it will recalcify; I have seen the recalcification.

Dr. WEDELSTAEDT. May I ask a question? Will the gentleman kindly tell me with what he treats this leathery decay?

Dr. GALLOWAY. I dry the cavity perfectly, expose it to heat as a rule, and use Dr. Black's 1, 2, 3; it is one of the best antiseptic treatments I know of.

Dr. WEDELSTAEDT. May I ask why does he use Dr. Black's 1, 2, 3?

Dr. GALLOWAY. Because it will do the work. It consists of one part carbolic acid, two parts oil of cassia, and three parts winter-green.

Dr. WEDELSTAEDT. Will you kindly explain what you mean by "does the work?"

Dr. GALLOWAY. The question is this; the doctor disputed the fact that the softened dentin would recalcify; I hold that it will with this treatment. It has done it.

Dr. WEDELSTAEDT. I would like to say a few words before the discussion is closed. The last answer the gentleman made was, "It did the business." I cannot let that pass, for I know better. Last

year you were very kind and asked me to meet with you. This whole subject of leathery decay and decay in general was carefully gone over. Moreover, the results that follow the leaving of soft or leathery decay in the cavities of the teeth that are filled were most carefully considered. We know definitely what follows when things of this kind are done, for leathery decay is simply decalcified dentin, and decalcified dentin we know is something dead. Then if it is dead why leave it in the cavities of those teeth which we fill? It does not save the tooth; on the contrary, it more often than not leads directly to its loss. All the germicides in the world could be used on this leathery decay and still it would not be placed in such condition as to be anything else than an irritant and a source of danger to the stability of that tooth. Now let us consider this a little farther. What is Black's 1, 2, 3? It is a disinfectant, and therefore destroys the life of micro-organisms. And what are micro-organisms? Small bodies of albumin. After life has been destroyed bodies dissolve; micro-organisms are no exception, hence we very often have toxalbumin as a result. Toxalbumin is simply a poison like any other toxin and is capable of doing just as much harm as the majority of poisons; therefore, with our knowledge developed to this extent, soft or leathery decay should at all times be thoroughly removed from all cavities that are to be filled. I am perfectly willing to acknowledge that occasionally a child five or six years old is brought to me who is in a highly excited condition. The child has heard of the awfulness of dental operations and is consequently greatly alarmed about what has to be done. I say that I am perfectly willing to acknowledge that I will temporize in any way with a child in this condition, but, as soon as I gain that child's confidence, temporizing methods are laid aside and the work is properly done.

Dr. MONFORT. I am glad Dr. Wedelstaedt made that last statement in regard to exceptional cases. Dr. Black in his cavity preparation sets for us, as I understand it, an ideal cavity preparation, and it is the ideal we are trying to attain. Now there are cases that come up, not only in children but in adults, in which it is impossible for us for certain reasons to carry out that ideal. Dr. Black, I think, wants to come as near it as possible, and I am glad the doctor made that last statement,—that we may know that he recognizes exceptions to the rule.

Dr. GALLOWAY. I am very glad of the criticism upon the opinions expressed in my paper. I gave a practical view and not a scientific one, and the main question now, the only question left, is the one that Dr. Wedelstaedt has taken issue on, viz, the removal of decay. I will say that we should as a rule remove all decay, but there are cases where it should not be done, and these are the ones I referred to in my paper. I mentioned it in the paper with the expectation it would be attacked and discussed. I think the most of you know how and when to treat these cases and when to take it out, and the amount of decay to leave in a tooth. I refer to classes of molars where we often find a great cavity over the pulp; we find the dentin discolored, and while it is soft you can hardly call it de-

cayed dentin and yet it isn't hard, as the dentin should be, and there is not very much sensation; that is the class of cavities I refer to. I am not sure that I know positively what takes place there, whether it is secondary dentin built in or recalcification, more likely the latter; but the best treatment, as I mentioned, is to treat antiseptically and give it a chance to recalcify or let nature repair it itself. Nature may see fit to cause the pulp to recede and build secondary dentin to protect it; it has been my experience that it will do that in many cases.

Dr. VANCE. I am sorry to say that some of the speakers had to invent an excuse for saying something adverse to the paper. I did not write it for the purpose of objecting to thorough cavity preparation, or to advocate imperfect, unskillful, or unscientific work in the preparation of cavities. I selected the title of the paper to furnish argument for the clinic I expect to give to-morrow in this connection, and the thought was simply to call attention to the inconsistencies of the dental profession in spending the time they are doing with technical advancement without any attention being paid to the information the public should receive along that line, except the few individual patients met in our offices.

One of the members of the State Board told us yesterday that there were eleven or twelve hundred dentists in the state of Iowa. You look over the audience to-day and there are less than ten per cent. of the men who are building the reputation of the dental profession in the state of Iowa paying any attention to what we are discussing to-day.

I believe, as Dr. Monfort and others have said, Dr. Black's ideas are intended to be ideals, and we are expected to use good ordinary sense in interpreting those things and applying them to each individual case; nothing can be given that will fit all.

Dr. Baker makes light of the matter of fees referred to, but there are few men in the profession who have the privilege of practicing in large cities with a rich *clientèle*. The great proportion of the people cannot pay ten dollars an hour for first-class operators to put in gold fillings for them; a few people in every city can, but most cannot; you must meet these people.

A gentleman goes into Dr. Wedelstaedt's office in St. Paul and tells him he has had inserted twenty-six fillings in an hour; that is the kind of a man I am trying to educate,—the man who would permit such botch-work as would be done if twenty-six fillings were placed in his teeth in an hour of time. If that gentleman had had the information I would like to see in the possession of every individual throughout every commonwealth in this broad land he would not have declined to wait a few days for Dr. Wedelstaedt, nor would he have needed twenty-six fillings. He would have waited as many years before he would have allowed such operations performed as were done in his mouth. These unscrupulous dentists, just the kind Dr. Wedelstaedt described, infest every community in this land. You have got to confront that proposition, and the sooner you admit it is true, and get after it with some system which exposes the nefarious methods of such dentists, some method of procedure



that emanates from a dental society of recognized standard, the sooner you will begin to teach the public an appreciation of good dental services. There isn't any doubt that Dr. Wedelstaedt's patient appreciated the operations made necessary by his folly, but, as in all such cases, incalculable harm was done before that fact was made patent to him.

Our duty is to teach the public what they do not understand, something of correct principles of dental procedure; and teach them, not their children. It is ours to teach them enough of dentistry that they may know how to be relieved of suffering. Our duty is to the people of to-day, to my brother and yours. You can't commence to educate the people of to-day on the subject of dentistry by talking to the children, though that is a very laudable thing, and I wish it might be done more thoroughly. We have to teach these things in our schools and in our offices, but we have to reach the people that don't come to our offices. Someone spoke about the number of teeth operated on; if any of you will take the time to look over your dental registers and estimate how many teeth in the patients' mouths who have been patrons of dentists have been filled, you will find that but little more than half of the teeth in their heads have been operated on in the entire history of the patients' operations. You all know that less than fifty per cent. of the people comprising any commonwealth are regular patrons of the dental office. That reduces the number of teeth operated on to about twenty-five per cent. of all teeth. I think the gentleman who is going to give the statistics on that subject will bear me out in the statement that only one out of every four of the teeth in the human family have any attention,—not because people cannot afford it, but because they do not appreciate what the dentist can do for them. When you teach them that you can do comparatively painless operations and prevent the unscrupulous operators from imposing on them, you will have done as great a benefit to the people that live now with you as you ever can hope to do by educating the children through the schools and by all the methods that have been proposed for the education of the people.

I don't expect to make dentists out of the public. Someone said yesterday we should not teach them,—that the less they know the better for the dentist. If I thought that about it myself I would quit dentistry. If I thought my operations would not bear the closest scrutiny and would not be considered worthy and appreciated by the individual if he knew the very scientific principles applied in that case, I never would have the courage to hold up my head and look him in the face. I want everybody for whom I perform operations to know how and why and what I am going to do. When he knows that he will come back to me the next time, or he will hunt up somebody who he knows will perform a good operation. The dental profession is full of men who are just as dishonest as they can be; you all know it, and it is our duty as well as our privilege to commence a scientific method of informing the public about the unscrupulous, unscientific, and deceitful practices followed by the men who think more of the dollar than of the welfare of the individual unwary enough to enter their doors.

My object is not to tear down any of the scientific methods applied to the preparation of cavities; I simply wanted to call attention to the inconsistencies between the labor we are putting on those things and the labor we are doing for the advancement of knowledge of the people upon whom we hope to operate and to serve.

On motion, adjourned until 8 P.M.

### *Evening Session.*

The following paper, by Dr. A. C. HEWETT, Chicago, was read:

#### ANALGESICS IN ORAL AND MINOR SURGERY.

There are many dentists who still fear to use chloroform as an analgesic, and who are equally fearful of the use of cocain and do not find other remedies efficient, who earnestly wish to practice pain-avoidance. Therefore the form and subject-matter of this paper.

#### *Definitions:*

An *analgesic* remedy is one which when administered to suffering animals, whether human beings or lower orders of animals, obtunds pain, but *not sensation*.

*Analgia* as a condition is an insensibility to pain, but not to tactile or sensorial impressions.

*Anesthesia* as a condition is one not only devoid of pain, but of tactile sensation and motion (*aisthesis*, sensation; *kinesis*, motion).

I wish these definitions carefully noted and that a critical distinction be borne in mind between "analgia" and "anesthesia." The former is a condition of absolute safety, as I have demonstrated thousands of times; the latter (anesthesia), is one of frightful danger, as I have often realized and have striven to emphasize before this society on several occasions.

I wish that I had some gift of language, some occult, resistless power of suggestion that should impress, hypnotize, entrance you into a realization of the truth and value of the above definitions, distinctions, and statements. What a benison it would enable you to bestow upon every child under your care! How regally you would stand among your fellows, a destroyer of dread,—a king to banish pain from your realm!

There are numerous agents possessing analgic properties in a greater or less degree,—too numerous even to name; some of them I give: Ethyl chlorid, chloral, chloral hydrate, chlorodyne, chloralamid, and nearly a dozen other preparations or derivatives of chloral; sulfonal, potassium bromid, trional, and the long line of coal-tar derivatives; then there might be named an equal number of medicinal agents with the foregoing, each possessing analgesic properties, perhaps in a little less degree of potency, but which if used hypodermically, with some hydrostatic force, in the *rete mucosum*, would obtund a small area surprisingly; and this too without the slightest toxic effect. Indeed, the list has grown to such a length that it has ceased to be attractive; I have only named the few above as hints to some would-be specialist as to what is before him if he would become an authority upon this subject.

The foregoing list with two or three exceptions are to my mind

practically valueless for local or general analgics except as adjuvants or modifiers of more potent drugs. In this view they may be very important. They may modify or dilute the stronger remedy and act as a counter force to some of the toxic influences persistently present in the analgesic relied on. Thus carbolic acid in a 10 per cent. solution with a solution of cocain hydrate of equal strength would by its coagulating effect limit the area of action possible to the cocain. Of course the limiting drug (carbolic acid) in such a case would likely produce sloughing, and perhaps would manifest its own toxic action whether administered interdermically or subcutaneously. In this view, and this only, are they important.

To complete the list which I shall give there remain: Opium, morphin, codein, papaverin, chloroform, ether, nitrogen dioxid, cocain, eucain, alcohol, carbolic acid, ol. caryophylli, piscidia erythrina, echinacea purpurea or echafolta, and thuja occidentalis.

Curiously enough it appears that all the known anesthetics are analgesics; but all analgesics are not sufficiently potent to become "anesthetics." The distinction seems to reside in the degree,—anesthesia being the superlative, if I may so phrase it.

A striking instance of analgic action as contrasted with anesthetic is found in the effect of echinacea, or echafolta. If a light compress of absorbent cotton saturated with echafolta is bound on a punctured, contused, or incised wound, or upon a burn, a surcease of pain follows in a surprisingly short time,—a fact not generally known and one which I have not seen stated elsewhere, but one well worth remembering. Here let me suggest to you young men that I can hardly imagine a more attractive "leisure-hour study" than the one of which I have been able to give only a hint. Take up the list *seriatim*, and learn the properties and uses of each and all, not only from works on botany and pharmacv, but by experiment.

You that have heard me on former occasions will expect me to treat of chloroform. I shall not disappoint that expectation, except by the brief space given it.

As a general anesthetic I give it first place in potency and first in safety if pure and if skillfully administered. I also mark it first for danger and fatality if impure and if unskillfully given; and though not strictly germane to my subject, I wish to digress sufficiently to say that in the domain of oral and minor surgery there are but five or six operations that will justify an operator in producing complete general anesthesia. Indeed, I believe there is not one. Local anesthesia and general analgia are ample.

Locally anesthetize the parts to be operated on. If this is impossible or apparently so, or too difficult, call to your aid the king's prime minister *analgia*, chloroform or sulfuric ether; and in doing the latter, do not forget the "principles" that should govern your procedure. To better convey my meaning, I will illustrate by referring to a common operation in minor surgery, concerning which some of you may have had experience,—periphalangeal cellulitis, "felon" of the worst form, paronychia of the fourth variety. Take, if you please, the first phalanx of the index finger; cellulitis commencing between the periosteum and the bone on the palmar surface



about the second or third day after the characteristic pain first developed. Finger swollen, throbbing; the last night passed sleeplessly, the whole nervous system aflame, the finger-end so sensitive that it can almost feel an approximation but cannot endure a touch; peripheral nerves from surface to parenchyma in an abnormal state of irritation. Is the patient to sit down and "have it lanced" without taking anything? Not if it were my finger. I would sooner go one hundred miles to find a surgeon and humanitarian combined. I commend

*Topical Anesthetic No. 1.*

R—Sol. ac. carbol. (10 per cent.),  $\bar{3}$ ss;  
Sol. cocain. hydrochlor. (10 per cent.),  $\bar{3}$ ss;  
Glycerin,  $\bar{3}$ ij;  
Water ad  $\bar{3}$ ij.

Put enough into a cup or wide-mouthed vial to immerse the swollen finger. "Soak" the finger for ten or fifteen minutes. During the last five minutes of the time administer an analgic dose of chloroform, pure (as hereafter described); or of æther sulphuricus (chloroform, pure, one-third, absolute alcohol two-thirds); or of nitrogen dioxid; and when the patient is close to the border of anesthesia, "lance the felon." In cutting, thrust the point of the lance through the soft tissues and periosteum until it strikes the bone, taking care not to wound the perichondrium and cartilage of the first joint; thence "slit," with downward pressure and forward stroke, the periosteum and overlying tissues to the point of the finger. You will probably bring out upon the knife's point a small globulated quantity of pus, showing that your operation has been a success.

Allow the wound to bleed as freely as it will, and when hemorrhage has about ceased, draw the lips of the wound together as closely as may be, and hold them for a few moments, then secure them in place with one or two very narrow strips of antiseptic surgical plaster. If pain has returned in severity not easily borne, immerse the finger to cover the wound, and a little more in the following:

*Topical Anesthetic No. 2.*

R—Sol. cocain. hydrochlor. (4 per cent.),  $\bar{3}$ ss;  
Echafolta,  $\bar{3}$ j;  
Glycerin,  $\bar{3}$ ij;  
Aq. pur., ad  $\bar{3}$ j.

When pain has ceased or nearly so, remove from the mixture, and while yet damp, cover the wound and a small area beyond with Vitogen dusted on, or with the following:

*Dusting Powder.*

R—Lycopodium,  $\bar{3}$ j;  
Salicylic acid,  $\bar{3}$ ss;  
Pulv. orris root,  $\bar{3}$ ss;  
Europhen,  $\bar{3}$ j;  
Zinc stearate,  $\bar{3}$ j.

Or,

R—Pulv. opii, gr. xx;  
Pulv. camphor,  $\bar{3}$ ss;  
Lycopodium,  $\bar{3}$ ss;  
Zinc stearate,  $\bar{3}$ j.

Over the dusting powder lay a thin film of antiseptic absorbent cotton, large enough to a little more than cover the wound. Paint the cotton pad with a varnish composed of

R—Gum resin (of *Pinus sylvestris*), ʒij;  
Absolute alcohol, ʒj.

Over the cotton and varnish lay a covering (a trifle larger than the cotton) of very thin linen, lawn or fine mull,—or, better, tough tissue-paper. Apply upon the latter a generous coat of the varnish. Leave it a few moments for alcohol to evaporate from the resin, and again dust with the chosen powder. By this time all pain will have ceased. Bathe the finger above the dressing, and also the hand, in the Topical Anesthetic No. 2, and allow the same to evaporate from hand and finger.

If the dressing has been well and skillfully applied, and kept well down around the edges, the covering will be waterproof, and remain for days impervious to septic invasion. Should the dressing become raised at any point, add varnish and re-seal. If it becomes necessary to remove the dressing before healing, alcohol applied will soften the varnish so that all will readily peel from the finger. In a large majority of such cases so treated the wound will close by first intention and painlessly.

Why not anesthetize the finger by a hypodermic before lancing? Because of the horrible agony the needle-thrust would cause.

*Carbuncle.* To make a crucial incision painlessly: Wet a pad of absorbent cotton, large enough to cover the entire carbuncle, in Topical Anesthetic No. 1, and lay upon the tumor, leaving it there for from five to ten minutes. Remove the pad and place a small crystal of carbolic acid in each opening of the carbuncle, pressing each crystal gently below the surface into the openings, and re-wet and replace the pad. Then give the general analgesic, chloroform by inhalation to near the border-line of anesthesia. With a keen blade make the incisions as deep and wide as necessary. After bleeding has ceased, wrap crystals of carbolic acid, one or more to equal the size of a wheat grain, in absorbent cotton, a thin layer, and pass down in the center of the incisions to a depth of one-fourth of an inch. Cover the tumor with a pad of cotton wet in the following solution:

R—Echafolta, ʒij;  
Aq. pur., ad ʒjv.

Sig.—Bathe parts and keep wet with compress, moistened frequently.

Give internal doses of the echafolta of the above mixture, one teaspoonful hourly for six hours, and thence on every three hours. Your patient will make a rapid recovery,—practically a painless one. I have never known a fatal case of "blood poisoning" from carbuncle, or from any wound, where this treatment was followed.

*To curette a diseased antrum painlessly.* The opening to the antrum should be made of ample size. The soft tissues around the opening should be anesthetized by hypodermic injections as close to the alveolar borders as practical. Preparation for the injections should be made by topical application of an anesthetic, the constitu-

ents of which would preclude its use hypodermically. Some of you have heard of com. cocain pigment. It is still my favorite for topical use, never for hypodermic. A simpler one I will name

*Echafolta Compound Obtundent.*

R—Echafolta,  $\text{ʒiij}$ ;  
Cocain hydrochlor. (10 per cent. sol.),  $\text{ʒij}$ ;  
Fl. ext. cactus grandiflora,  $\text{ʒij}$ ;  
Glycerin, ad  $\text{ʒj}$ .

Sig.—Apply topically to parts, as dry and free from mucus as possible.

A ball of absorbent cotton wet with the obtundent should be rolled around in the cavity to moisten as much of the cavity tissues as possible. Then administer the general analgic, and your patient is ready. If properly instructed previously, he will be entirely quiet or will request more of the analgic, in which case it can be safely given.

The operator can then, with the curette, quietly exercise that delicate sense, touch, so essential to success.

The question of formula (and I emphasize that word) for hypodermic use is an important one. There are numerous preparations on the market, most of them professedly non-secret, but really, as they are intended to be, secret, except to the expert chemist and to the patient experimenter. Proportion is as important in a formula as ingredient. For example, the following formula was kindly given to me by Dr. Edward H. Ochsner, who operated for a friend of mine with entire absence of pain during a delicate and difficult operation, local anesthetics only being used:

R—Cocain hydrochlor., gr. j;  
Sodii chlor., gr. xij;  
Aq. dest.,  $\text{ʒiv}$ .

Sig.—Use as a hypodermic.

(Who but an expert analyst would understand it if it read “cocain, salt and water”?) The preparation has the merit of being both safe and stable.

Another procedure of Dr. Ochsner is in the preparation of the parts cut, for the puncture of the hypodermic needle. It is “A pad of absorbent cotton, wet with a 4 per cent. solution of carbolic acid,” laid on the surface, and left in contact for a few minutes.

For a similar purpose, and for topical application in the mouth to the gums, to ranulæ, adenoid and epithelial growths, and to the tonsils in cynanche tonsillaris, and for excision, I commend the following. I do so with much confidence, having first tested it upon myself, in the mouth and elsewhere. I believe it perfectly safe,—topically, not as a hypodermic.

*Compound Topical Anesthetic.*

R—Cocain hydrochlor., gr. xxiv;  
Cactina (from Cactus grandiflora Mexicana), gr. v;  
Fl. ext. Piscidia erythrina,  $\text{ʒij}$ ;  
Glycerin,  $\text{ʒij}$ ;  
Echafolta, ad  $\text{ʒij}$ .

Sig.—Use with application as a topical analgesic.

Another formula I reproduce from my paper published in the



*Dental Review* (June, 1893, p. 466), which had been used for years before, and of which Dr. Ingalls said he deemed it as safe as a "hypodermic" to the extent of five minims, and that its effect is marked and reliable. I deem it safe for double or treble that amount, as the antagonists of cocain,—atropin and strophanthin,—and the "localizers," carbolic acid and ol. caryophylli, preclude any toxic effect; years of use has demonstrated this:

R—Atropin, gr.  $\frac{1}{16}$  ;  
 Sulf. strophanthin, gr.  $\frac{1}{8}$  ;  
 Cocain hydrochlor., gr. xx;  
 Acid. carbolic., gr. x;  
 Ol. caryophylli, min, iij;  
 Aq. dest., ad  $\bar{3}$ j.

Sig.—Local anesthetic for hypodermic.

I will give one other which I have named after myself, as it is my only original local anesthetic for hypodermic use, which I can trust as both safe and efficient.

*Dr. A. C. Hewett's Local (Hypodermic) Anesthetic.*

R—Cocain. hydrochlor., gr. xxxviiij;  
 Sodii chlor., gr. xij;  
 Cactina, gr. ij;  
 Echafolta,  $\bar{3}$ ij;  
 Glycerin,  $\bar{3}$ ij;  
 Aq. dest., ad  $\bar{3}$ iv.

Sig.—Local (hypodermic) anesthetic, five to fifteen drops.

This formula will be found valuable in all cases where only the skin is involved, as generally in steatomata, atheromata, and phy-mata, warts, moles, etc., in which case the hypodermic needle should be thrust no deeper than through the rete or corpus mucosum, reaching the corium or cutis vera. It is by its antiseptic quality especially adapted to use for injecting into the spinal cord between the last dorsal and first lumbar vertebræ, as advised and practiced by some, or between the third and fourth lumbar vertebræ, as advised by others. This operation is an easy one, and as far as I have been able to learn there has as yet been no fatal result following, but alarming symptoms have supervened. I, however, do not commend the operation with my formula or with any other, preferring other known and tried means for anesthetizing all tissues below the diaphragm.\*

You will note that in all the formulæ I give plate to cocain hydrochlorid. I have yet to find its superior as an agent in local anesthesia. I have yet to find any formula that will completely and invariably hold pain in abeyance locally unless cocain is the potent factor. I am aware that salt and water and warm water alone sometimes avail, but they as often fail.

Limit the area of cocain anesthesia so that it shall not reach

---

\*Since writing this paper fatalities have occurred. Recent study and thought lead me to the conviction that the danger far outweighs the good (?), and I now emphatically condemn the operation. *Vide* paper read at the Sedalia meeting of the Missouri State Dental Society, and published in the *Western Dental Journal* for December, 1901.

that wonderful little nerve-branch from the pneumogastric that straggles off to the heart; use an antagonist to cocain action,—a heart stimulant that shall countervail any lethal effect,—and you are safe. Of course no bloodvessel or nerve of any size, or nerve that controls respiration or heart action, should be pierced by the hypodermic needle, else thrombosis or paralysis may supervene.

I would strongly urge that always before a hypodermic containing cocain is administered, 1-30 of a grain of atropin, and 1-60 of a grain of strophanthin should be placed upon the patient's tongue about three to five minutes before the operation, unless these or other equally good remedies are in the formula used. Cardiac and respiratory stimulants should always accompany or immediately precede a hypodermic of cocain. The hypodermic should also always be compounded with localizers so that it (cocain) cannot enter into the general circulation. If you wish to anesthetize a mole or tumor, confine your anesthetic to the region of the tumor and do not permit it to stray beyond, to plexus and ganglia, cardiac and respiratory.

In cocain poisoning, or in paralysis, vertigo, or collapse, heart stimulants should be administered. Among the best known perhaps are atropin with strophanthin, cactus grandiflora ("specific," fluid extract, or "cactina"), adonis vernalis, fluid extract of adonis, or adonidin. Diffusive stimulants should also be given.

I have thus spoken of cocain by formulæ and inference at some length. It is a grand remedy. It will go with opium adown the centuries both lauded and maligned, carrying toxic and life-prolonging activities; the two with chloroform a trinity of benefactions if guided by science, but of death-dealing power as dreaded as is the *Echidna osellata* if in the keeping of ignorance and charlatanism. Would you banish either from your cabinets because of the danger? As logically reject fish from your tables because a gourmand may gobble a bone into his throat and choke.

I shall not challenge your self-respect by suggestions as to the manner of using the hypodermic syringe, except that in aid of your operations and to gain the confidence of your patients and encourage them, do not thrust the needle into flesh anywhere until you have previously applied topically a four per cent. solution of carbolic acid as practiced by Dr. Ochsner, or a pigmentation of some active topical anesthetic. Be surgically polite,—“kind in little things.”

I have noticed that such an application (topical), especially in the mouth, is a surprising aid to general analgia produced as I shall now describe. If preparing the patient for an oral operation, do not fail to paint the parts with the chosen “topical anesthetic.” The patient is seated in your operating chair, body leaning back at an angle of about 24 degrees, but the head slightly forward in a natural, easy, waking position,—never strainingly back.

Use a wide-mouthed, squat bottle of one to two-ounce capacity. Pour into this about two drams pure chloroform, or “strong, concentrated chloric ether.” From the bottle so charged get the patient to inhale the drug through the nose (holding one nostril

closed), or through the mouth, slowly at first, and, after three or four inhalations, as rapidly as may be without strangling or spasmodic coughing; inhalation continued until the eyelids begin to droop lazily, the body muscles begin to relax, and a general analgia is apparent, approaching well on to general anesthesia.\*

Two dangers attend the administration of chloroform, and only two: First, the nerve shock in the first inhalations. Avoid this by gradually stealing past the nerve sentinels. Second, a *progressing general anesthesia* as defined above, one involving in sleep the nerves, plexuses, and ganglia controlling respiration and heart-beat. Do not give too fast at first, or too much at the last; between the two lines lies a region of absolute safety with amply sufficient analgia for all operations, as I believe.

To show that this is no idle belief, I ask you to bear with me while I narrate a case in point and then read a letter: In July of last year I had the misfortune to have the third finger of my right hand crushed so that an amputation was imperative. About an hour elapsed before I could get from our foundry to the office of the surgeon for the operation, and by that time pain had become intense and the wound very sensitive to touch. I had telephoned the surgeon to be in readiness to operate. On arrival I saw an array of instruments in and out of hot water that had I been less accustomed to such sights would have appalled me. I requested him to examine the wound carefully and remove all splinters of bone that could else delay healing. He did so, but before he commenced I took sufficient chloroform to obtund the parts. During the preliminary work I experienced not the slightest pain, though his handling and turning of my hand before I took the analgic hurt me severely. The letter tells the rest. During the entire operation on my finger which was so neatly performed there was no pain; *that I remember*. When the steel jaws of his ligating forceps grasped the white, curiously wrought nerve of which he speaks, and drew it down from its sheath, a shiver of fear ran over me, and I presume I flinched, but I remember no pain.

DR. A. C. HEWETT, 491 Adams st., City.

CHICAGO, July 9, 1900.

*My dear Doctor,*—Replying to your request as to the result of chloroform administered by your method in your own case, for the relief of pain in amputating a crushed finger on your right hand:

It was necessary in this case to remove about one-half inch of the bone of the second phalanx of the ring finger, and to trim up the ragged soft tissues in order to make a neat covering for the end of the bone. After using my best efforts to render the wound aseptic, I was then ready to amputate the finger. Before beginning you took a seat in a large arm-chair, in a reclining position, and, with about six drams of chloroform in a short wide-mouthed bottle, you began to inhale same. In the course of about three minutes you told me to proceed (removing the bottle from your nostrils and holding your hand out over the table), and I did so at once, pushing the bruised, lacerated tissue back from the end of the bone; this being held there, the end of the bone was cut off with a pair of bone-forceps. I then trimmed up the soft tissues so as to make the flaps fit neatly, which you watched with a good deal of interest, and so far as I was able to detect without evincing

---

\*A surgical "anesthetic mask" may be used instead of the bottle; my preference is for the bottle at first and then the mask afterward.



any evidence of pain, save in one single instance when I caught hold of the nerve on the ulnar side of the finger and snipped it off with a pair of scissors. One ligature was necessary to be applied to control hemorrhage, and the wound was then ready for suturing. At this stage you again applied the chloroform to your nostrils and inhaled it for a couple of minutes more, after which you said, "Do your sewing." I then introduced four sutures, and if the piercing of the tissues with the needle caused you any pain there was no evidence of it that I could detect, and during the entire operation there was but an instant of time but that you could have answered intelligently any question put to you, and that was just before the introduction of the sutures.

Had I not been convinced before that chloroform can be given to a point where the sense of the nerves is obtunded to a degree sufficient to do minor surgery without the patient losing consciousness, this experience on your own person would have been evidence sufficient to convince the most skeptical.

Trusting your wound will heal kindly, and that your hand may be useful for many years yet to come, I remain

Sincerely your friend,

(Signed) W. A. TICHENOR.

If the contents of that letter are true, it means something. Gentlemen of the profession of surgery and medicine present, it means something to you, and something more to your patients.

Knowing you as I do, not personally, but professionally, sympathizing with your trials, knowing how it pierces your hearts whenever a patient dies to whom you have administered an anesthetic, I say if what I have told you is true it means very much. I believe as I believe anything that if I were to have an arm or leg amputated or suffer any operation to be performed upon me I could look upon it and take my own chloroform and not lose consciousness. That is exactly what I would do; I wouldn't allow any man to completely anesthetize me. I believe it could be done without one particle of danger, and *painlessly*.

I have thus given to the dental profession here a long paper detailing the use of cocain. I have done so from a conviction that has been growing and strengthening within me for the last thirty years and more. I commend it to your careful consideration. There is not a person in my presence here to-night but what can safely use chloroform to good effect. Measure my words when I say them. Have the courage of your convictions; be kind; be humane; copy from the surgical and medical profession in pain-avoidance,—they are worthy of being copied by you. And would that I could bring a benediction upon you! Would that, for the love of it, I could bring upon you and for you the virtues of the sages that have gone before you, and your predecessors in science; that upon you and within you those virtues might brighten and illuminate, and might be transmitted to those that may come after!

At the opening of the afternoon session the president announced that as so much time had already been consumed and there were many papers yet to be read, the remaining papers would have to be read without allowing any discussion. (We shall therefore not continue the report in this form, but shall publish selected papers in the department of original communications.)

## MARYLAND STATE DENTAL ASSOCIATION.

(Continued from page 385.)

THE following paper was then read by Dr. F. PRIMROSE, Baltimore:

## THE STATUS OF THE DENTAL PROFESSION.

This is an age of great progression. It may be the greatest the world has known; it is the greatest so far as history has revealed the past to us. The schoolboy of to-day discusses anatomical questions. The schoolmistress propounds problems in physiology which would, a few years since, have staggered the general practitioner. Knowledge is fast ripening and giving their proper positions to all things, and the dental profession, to support the doctorate assumed by dentists, must, in matters of education, present to the world such scientific attainments as will place this attribute beyond the criticism of the world.

Many years ago now, the late Prof. Garretson read a communication before the Association of the Colleges of Dentistry, at a meeting held in Philadelphia. The gist of his argument was to elevate the standing of dental colleges, so as to place their graduates before the world as oral surgeons, specialists in the great field of medicine and surgery. In part, Professor Garretson declared that our sphere of duties was too restricted. The proofs he gave were: (1) That graduates of dental colleges manifest to the world their inability to treat any diseases outside of those associated with a few semi-vital organs and which are diseases requiring for their treatment rather the skill of a mechanic than that which the world recognizes as characterizing a doctor. (2) That their attainments are understood by the community to be not of the same general character as those of other specialists, is proven by the fact that while all other specialists are understood to be proper doctors, and are so received and consulted, the dentist is not.

Great changes in the status of the dental profession have taken place since this communication, and much praise is due that great pioneer of oral surgery and his associates in the uplifting of the dental profession and the placing of its members before the world as oral surgeons. Professor Garretson believed that a dentist should be qualified to meet the requirements of a general surgical practitioner, with more direct application to oral diseases, beginning with the teeth and ending with the complexity of the subject. It was his aim to place the graduates of dental schools before the world as surgeons,—surgeons by education, equal to any demand emergency may, at any time, make upon them, whether on the railroad, on the battle-field, or called hastily from the privacy of the office. He wished them to be specialists, as Garretson himself was a specialist in oral surgery, or Nettleship in ophthalmic surgery. True, they are more restricted than those gentlemen, for, having so much to do upon the teeth, their opportunities become limited. But every graduate in dental sur-

gery should mean to the community a man capable of treating every disease of the mouth and associate parts, just as ophthalmic surgery means to the community the treatment of the hundred diseases of the eye, with its cavity and associate parts.

Operative skill and mechanical exactness come through constant practice, stimulated by love for our profession, ever aiming higher and higher to attain perfection. And in the routine daily life of the dentist his manipulations call for such delicacy of touch and exactness in operation as would put to shame the major operations so triumphantly performed by the general surgeon. But this is not all we require. Our higher education, the study of the human being as it is presented in medicine and surgery, its histology, bacteriology, pathology, etc., do they not all point to the prevention of disease, or for the relief and cure of what already has occurred? And why should the dentist not use his knowledge? Why does he not use it? Should he not be in a position to judge what is best for his patient,—pertaining to his specialty? How many of us write prescriptions? How many of us are capable of writing them? Prescriptions are a source of wealth to the physician; then, if we are doctors, why not use our privileges? Should we not be in a position to diagnose syphilis as quickly, as correctly, by the symptoms presented in the oral cavity, as the physician? Do we not recognize the pathological changes in the mouth caused by pregnancy and lactation which would pass unobserved by nearly every obstetrician? and why should we not prescribe for such? Why should we not at once recognize an epithelioma and be prepared to remove it, to the everlasting blessing of the patient, and a crown of glory to the dentist? Let us follow the example of Dr. Garretson, and be stimulated to higher professional education, and use and apply that which is our privilege.

I remember a story Professor Garretson told his class, the circumstances of which did much to bring him to a true knowledge of his early position, and stimulated him to gain knowledge that the doctorate might be dignified. "In my young days," said he, "I began the practice of dentistry with little knowledge and much presumption. It was my desire to make the acquaintance of a young lady, the daughter of a certain learned clergyman. I called, presenting my card as Dr. Garretson. While waiting for the lady to appear, I was entertained by her father, who in a very diplomatic manner began to obtain knowledge whether or not I was entitled to the distinction of doctor, and therefore a suitable acquaintance for his daughter. The clergyman said, 'By the way, doctor, one of my parishioners slipped and broke his knee-cap,—what is the technical name you doctors give it?' I did not know, nor could I invent one. After many attempts, and as many failures, the learned gentleman remarked that names will pass from the memory quickly. I felt thankful for his kind admission, and thought I was making very good headway, had not an old lady in his congregation been operated upon for cataract. I was asked to explain the operation. Here I was more at sea



than with the broken patella. I knew nothing of the crystalline lens, nor why it caused blindness. Conversation ceased. I was asked no more questions, nor was I asked to repeat my call. I had been taught a good lesson, and henceforth would put myself in a position to answer, at least, the everyday questions." And you will agree with me that Dr. Garretson succeeded. The false title of doctor was, in later years, replaced by the dignified "Professor."

Many of us are open to ridicule on account of this title of "doctor,"—this false plume given to every graduate in medicine, surgery, or dentistry, or any person or fake who may practice or attempt to practice the healing art. Who among you would not prefer Mr. to Dr. or Professor? When a man has justly earned his title, has given to the world evidence that he is learned, then designate him as such, but because he has met the requirements of certain schools in medicine or dentistry is no reason that he should be called "doctor."

The dental profession is now well launched upon the world. Sixty years have elapsed since the first school was successfully established for the purpose of teaching science and art in dentistry in a manner calculated to elevate it to the rank of a liberal profession. Nearly every large city in the United States has one or more established schools, with the fullest possible recognition of all that is demanded for the successful accomplishment of the aims and objects in view. The standard of those schools is gradually being brought to a higher level. Institutions of learning, as a rule, like individuals and nations, are compelled to enter upon their careers limited as to means and often as to knowledge. But the seed laid in the ground under favorable influences germinates and produces a thousandfold. So with the increase of years, strength, and resources, evidence of growth will be manifested in our collegiate institutions by their enlarging the curriculum of instruction, increasing the means of illustration, and in every direction affording the fullest opportunity possible for the impartation and the acquisition of knowledge.

But, gentlemen, we who have long since passed our college days are as responsible for the uplifting of our chosen profession as are the schools and colleges or the legislature,—in that we show to the world that we are learned men, fitted both by collegiate training and by close application to treat any disease within the jurisdiction of dental surgery. Then, and only then, will the educated public recognize in us men worthy of their confidence, and consult us as such.

We cannot praise too highly our dental literature, our societies, and the high position attained by members of our profession,—all of those that endeavor to place our professional standing on equal ground with the other learned professions. Was ever a profession, trade, or what not, so abused, so dragged to dishonor by ignorant men, advertising quacks, charlatans of every description, as ours! As I look over the field of dentistry, I am ready to exclaim that, as a whole, dentists have done more harm than

good. The evil, ignorance, and stupidity have outweighed the good. "Ye gods and little fishes!" what a conglomeration it presents to view! Is it a wonder that we have to struggle for professional standing? And struggle we must, for many years to come. Fifty years ago our rank was not far removed from the barber, nor has it been kindly received by the mother profession; and it is my opinion that had it been made in the beginning a specialty in medicine and surgery, many of the barriers would long since have been burned away.

In a controversy between two great lights in our profession, one likened us to men sitting in a boat without oars or rudder, tied by a strong cord to the shore, which represented the medical profession. "Cut the cord," said he, "and we float to our destruction; hold fast to the shore, and we are safe." "The dental profession holds no such position," said the other, "we are tied by no cord. We are distinct and independent, and have grown up as such, and therefore must stand on our own merits." Both gentlemen were right to a certain degree. We are part of the general profession of medicine and surgery, yet cannot be classed with it as is ophthalmology and gynecology, because of the very position taken by the founders of our profession. Nor are we any nearer being united than in the beginning, and, although we may be considered by some of our medical brothers as mechanics, and poor ones at best, there are those of high standing in medicine who recognize dentists as adjuncts to medicine and surgery, and rank us among the liberal professions. As Hamlet said: "We'll throw away the worser part of it, and live the purer with the other half."

Had we been graduated as M.D.'s with oral surgery as our specialty, we would have been received as were the ophthalmologist and gynecologist, but we must make the best of what we have chosen, and, although often chagrined by the little confidence placed in us medically by the public, we still will struggle to aid the cause. The words of Professor Bond, of the old Baltimore College, will still at this late date bear repetition:

There is a fount about to stream,  
There is a light about to beam,  
There is a warmth about to flow,  
There is a flower about to blow,  
There is a midnight blackness changing into gray:  
Men of thought and men of action, lead the way!

Aid the dawning, tongue and pen!  
Aid it, hope of honest men!  
Aid it, paper! aid it, type!—  
Aid it, for the hour is ripe,  
And our earnest must not slacken into play:  
Men of thought and men of action, clear the way!

We are glad to see so many of our young men here to-night, many undergraduates. Our hopes for the future are in your hands. Dentistry is now a profession, and as dentists you must be professional men and establish yourselves as such. Your success will depend not on the diploma you receive, but upon the

thoroughness of the knowledge which is imparted, and your standing in the profession. We hope it will ever be your aim and ambition to glorify and uplift dentistry. Great have been the legacies you have received from men, alive and dead, to whom we look with pride and whose memories we reverence.

We have entered upon a new year. The past has been a grand one for the dental profession. There has been a marked progress in professional sentiment, and much has occurred to strengthen and develop our professional structure and place dentistry in a position, through its intrinsic worth, to occupy a front rank among the learned professions.

The National Association of Dental Examiners is elevating the standard of qualifications for practitioners and trying to bring about the unification of state requirements. A thorough preliminary education is of paramount importance to the dental student, and the dentistry of to-day requires for its successful practice a well-equipped mind, capable of receiving and utilizing knowledge. Remember, we are no longer barbers!

Again, the year just past saw the organization of the International Dental Federation, held in Cambridge, England, giving an example of the widespread interest taken in dental education throughout the world, promoting practical uniformity of educational standards and universal harmony of sentiment and professional aim.

We have also seen this past year the successful creation of army dental surgeons, which culminated after years of agitation, and it is our hope to see the navy likewise protected; may its achievement be realized this year! The status of the dental profession, as well as the value of dentistry as a branch of the healing art, was during the year past recognized by the medical department of the army and the subsequent enactment by the Congress of the U. S. of a law creating a dental corps for the army the members of which are of the same official status as a large majority of the corps of army surgeons.

I feel that I cannot better close my paper than by quoting a recent editorial by Dr. E. C. Kirk in the DENTAL COSMOS:

Another advancement is noticeable, one which we record with unusual pleasure: the better understanding of the meaning, spirit, and object of scientific work in dentistry manifested by the profession at large. Within quite recent years the mere mention of scientific as related to any department of dental work was sufficient to call forth criticism that it was "impractical," or "only theory." We hear less of the impracticality of scientific work in dentistry, for the reason that an appreciation of the true meaning of that term is becoming more general, and the champion of the practical is beginning to realize that the most practical man is he who knows the most about his life-business. Many of the papers which have been published during the past year bear evidence of the direct practical bearing of the scientific method of study upon the problems of dental practice.

#### *Discussion.*

Dr. E. A. BRYANT, Washington, said that he supposed he had been called upon to open the discussion because it was known that his opinions were opposed to those expressed by the essay-



ist. While listening to the paper he at first, and until near its conclusion, had thought that the author had not been reading the current dental literature. At the end he brought in the action of the International Dental Federation which met last summer in Cambridge, England, which shows that he has read these reports. He did not understand how the author, after reading the report of that meeting, could make such statements as he does in the paper. We know that some years ago Dr. Brophy and some other gentlemen became imbued with the idea that a dentist should be a graduate of medicine before undertaking the study of dentistry. Accordingly, they established a college where only men having a medical degree were admitted as students. The institution was a complete failure, and at the meeting of the International Federation Dr. Brophy said his ideas had undergone a complete change. At luncheon Dr. Brophy found himself sitting beside Sir Michael Foster, and during the conversation Dr. Brophy put the following question: He had a boy just nineteen years old, just ready to enter the university; should he be prepared by a long, four-years course in the university, and then be entered at the school of medicine for another four-years course? Sir Michael Foster's answer was, "I would prepare him for his life's work," and this is just what should be done with dental students. Prof. Griffiths says, "Thus the surgeon is at one end of the scale and the dentist at the other, and doubtless it would be a good thing to improve them both, *but in contrary directions.*" And again: "Of course the more the dentist knows of the human body or of any other kindred subject, the better he will be equipped generally, but *not* necessarily better furnished for the work of his own profession."

Some of us who graduated seventeen or eighteen years ago were offered the M.D. degree if we would take one year additional in the medical college. I spoke to Dr. Winder about the matter, and asked him if I should take this degree. He said, "No, it will not qualify you for the practice of medicine; it will only be an honorary degree." How much honor would be conferred upon a person holding a degree that upon its face entitles that which it does not qualify him for, I leave you to judge. My own impression is that such a degree would be conferring dishonor instead of honor to any man, and it certainly would confer an insult on the profession whose degree had fitted you to practice. Of course a man after he has graduated should go on and broaden his mind by any course of work he can take up, but it should be in such a direction as will better fit him to carry on his profession.

Dental education is the tendency of the period. Years ago they said that dentists needed more education, and they added a year to the college course. Was it practical work? It was in medicine, and the whole year is practically devoted to that which will not benefit the student in his professional work. The bill for furnishing the army with dentists says a candidate must be a graduate of medicine or dentistry. The examination was medical, and not practical dentistry. If the candidates got through the theoretical

part of the examination they were all right, but the majority never got to the part of the examination which was supposed to develop what they knew about dentistry.

He had graduated in Baltimore seventeen years ago with the degree of D.D.S. He did not know how many there were in the room holding both degrees, nor how much better their success had been than his, but he considered his degree an honor and one he might well be proud to bear; and he thought it sufficient. Have the graduates since the course was extended proved to be better dentists than those graduating before?

Now they are going to make the course four years, but, if we can believe what the papers say, the added year will be devoted to practical work. He thinks the graduates in the last sixteen years, with the three-years course, are not better dentists than those who had only two years in college. The college-educated men are coming into the profession, and we can look to them for scientific and theoretical advance, but not for practical. We may be mechanics,—perhaps we are; but even our friend the president of the Army Examining Board *admits* that we need considerable mechanical skill, and we *know* that we do. Our work is in the mouth, and for it the chief requirement is mechanical skill, and we cannot have too much of it if we are to be successful dentists.

I do not know anything of medicine, nor do I wish to. I have the recognition of the best physicians in Washington; they recognize me as a dentist, not as a physician. They send their patients to me, and come to me themselves for my services.

I am sorry Dr. Garretson ever got into such a tight place. I wonder if the clergyman did not remember that he himself was also a doctor. We have doctors of law and doctors of theology, as well as doctors of dentistry, and any of these might and probably would be as ignorant of anatomy as was Dr. Garretson. If you look over the papers read at the International Dental Federation and recent editorials by Dr. Kirk, you will find that thoughtful men in the profession are coming more and more to realize that it is dental education that must fit a man to become a dentist.

Dr. W. A. MONTELL commended Dr. Primrose's paper and thoroughly agreed with his conclusions. He thought that too many men worried about a recognition which we are by right entitled to, but this is much a matter of personal equation. If the dentist deserves recognition, there is no doubt but that he will get it in full measure as deserved. He regretted the stand taken by Dr. Bryant. It could scarcely be seriously disputed that the broader and better one's education was on collateral sciences, the better dentist he would be. The study of histology, physiology, bacteriology and chemistry are as absolutely essential to a successful practice as anything he could possibly know. Without the knowledge of the development of the tissues, it is impossible to treat them when diseased. One word to Dr. Bryant: I love him, I like him, but he is in the path of error. Some day he will awaken from this nightmare that now holds him in its power, and

he will say, "O Lord, let thy servant depart in peace, for I have seen a new light."

Dr. W. A. MILLS said the time is near when we will have to determine whether we are to be doctors or not. If we are going to call ourselves Mr. or Professor, let us be mechanics, but if we are going to have the education that will enable us to prescribe medicine for such disorders as we recognize in our domain, then we are not mechanics, but physicians; and we should write prescriptions and we should be able to write them correctly. Don't do like a dentist of my acquaintance did, who wishing to prescribe "sanitol," gave his patient the blank prescription furnished by the manufacturers. This had on it three preparations, sanitol powder, sanitol paste, and sanitol liquid. The patient presented this at a drug-store where the preparations were not in stock, and the druggist procured all three preparations for her although she only needed one of them. A dentist should write prescriptions; to do so will increase the respect of his patients for him and bring him advancement.

Those who are content to be only dentists and despise all knowledge of collateral branches will not be able to keep up with the march of improvement. To young men I say, Do not let your knowledge stop at the end of the teeth. Do not believe that it should end there. Do not condemn histology, etiology, physiology, bacteriology; and by no means should you consider your education completed. Subscribe to a good medical journal, and read it, and you will be surprised after a year or two how much knowledge you have of medicine, and some time a case will come into your office that by reason of this knowledge you will be able to cure, and which without it you would not have undertaken. This will not only put money in your pocket, but will tend to your advancement very substantially.

Dr. HENRY F. R. SNYDER said there were many things in the paper he wished to commend. He could not understand how the knowledge of medicine could make any one a worse dentist than he would be without it. The study of histology, anatomy, and bacteriology will make a better dentist of a man than he could be without them. It is not necessary to have the degree of M.D., but it was well for a dentist to be able to write a prescription properly rather than to put down the name of a patent medicine in the English language. The foundation of dentistry is mechanical, but no one can be completely equipped to practice without the knowledge of many branches of what is usually considered medical knowledge.

Dr. WILLIAMS DONNALLY thanked Dr. Primrose for preparing such a paper to read before the society. He had read the paper over beforehand, and was able perhaps to appreciate it better than those who had not that privilege. He regrets that the founders of the profession were forced sixty years ago to establish a separate profession rather than to join with the medical, but they took that step, and the result is that dentistry is a profession, and every graduate in dentistry should endeavor to honor it as such. He



did not understand that Dr. Primrose advises dentists to study medicine, nor that he considers dentistry as less a profession than any other. We have all the requirements of any learned profession in preliminary requirements, in an extended college course of special training, and the holders of dental degrees are honored and appreciated both by the public at large and by members of the medical profession, and since the increased time required by the schools, in a higher degree than ever before.

It is wholly impracticable to give a man a medical education as a foundation for the practice of dentistry. Medical colleges have tabooed all that has to do with dentistry, and their graduates are less able to treat dental cases than they were twenty years ago. He did not think dentists should treat other than dental diseases. Such diseases as affect the mouth, as syphilis and cancer, they should be able to recognize, but they should refer the patients to physicians or surgeons for treatment. He was afraid that Dr. Bryant's attitude would be misunderstood. He was sure Dr. Bryant did not depreciate the teaching of bacteriology and other collateral branches, but that he felt that the practical subjects were not receiving sufficient attention.

Dr. BRYANT said that the Baltimore College of Dental Surgery was the oldest dental college in the world and was established because the medical colleges would not teach dentistry, but now in that college, and in all dental colleges that are branches of medical colleges, these collateral branches are taught by medical men who know nothing of the wants of the dental profession.

Dr. Primrose was called on to close the discussion, but declined to say anything further, and the meeting adjourned.

## FIRST DISTRICT DENTAL SOCIETY, STATE OF NEW YORK.

THE First District Dental Society of the State of New York held a regular monthly meeting Tuesday evening, March 12, 1901, at the New York Academy of Medicine, No. 17 West Forty-third Street; the president, Dr. William C. Deane, in the chair.

Dr. H. W. GILLET, of New York and Newport, read a paper entitled

### SOME QUESTIONS AND SOME SUGGESTIONS.

I have been influenced in my line of thought in preparation for this meeting by conditions that I have noted in several different dental societies.

It is a common experience to have a paper presented at a society meeting, and to have the open discussion following it present only commendation of the paper and further arguments in favor of the ideas presented, and yet to hear men say privately after the meeting that they not only practice along lines differing from those presented, but that they believe the procedures advocated to be radically wrong and injurious in their effects. Oftentimes they are ready enough in private to set forth the reasons for their disagreement with the conclusions of the essayist.

Is it playing fair to sit through a discussion of important principles or procedures, holding well-defined ideas in opposition to the general trend of the argument, or having facts in your possession that will probably tend to vitiate the conclusions presented, and not give your fellow members the benefit of your knowledge accompanied by your reasons for holding different views? It seems to me that we owe it to any society of which we are members or guests to present for consideration the facts we may have in our possession bearing upon the subject in hand.

In saying this, you will note that I have left out of consideration the "croaker," who contents himself with expressing his unbelief, but has no reasons to present in support of his position. He is always with us, but is not important in this connection so long as he is content to do his croaking privately.

In fairness to our essayists, and in the interests of progress along the lines for which we ostensibly associate ourselves, should we not more often base our arguments in discussion upon facts, rather than upon opinions?

Is it fair to an essayist, or is it conducive to progress, to condemn as useless or harmful the theories advanced in a carefully prepared paper, with data setting forth in detail the conditions of operation, reasons for the various steps and the results, except by citing in a similar manner the cases, conditions, and results upon which the criticism is based?

One of the questions I desire to ask of you is this: Why are so many dentists continuing to use arsenic for destroying pulps?

For several years the removal of pulps with the aid of cocain has been a well-defined practice. Papers have been written, demonstrations made, and results published, and the reports have been favorable without exception. In these years practically no word of opposition has appeared. No one has argued against the procedure, and no one has reported ill results. On the other hand ill results from arsenic continue to be reported, arsenical poisoning is a recognized bugbear, and in private you hear men talk of discolored and abscessed teeth following their most careful efforts.

Very recently I happened into the office of one of New York's most skilled practitioners and found him just dismissing a patient with refusal to give another appointment, because she had failed to keep the appointment for removal of an arsenical dressing. He had passed a worried and troubled day because she had failed to appear at the time set for its removal, and had been having visions of all sorts of ill results to follow.

There must be reasons why so many of you continue the arsenical treatment. Why should not surgical principles obtain in the tooth-pulp as well as elsewhere? None of you would consent to have a finger or arm removed by a process involving its sloughing from its attachments. Why is it better to apply the principle to the pulp now that we have well-tried procedures which permit surgical cleanliness to be maintained? In addition to this important general principle, I would note the testimony that discoloration of the tooth is less, that the suffering from the operation

is less, that pericemental disturbance is much less frequent, and that the stump left at the apex less often gives trouble in pulp-removal with cocain than with arsenic.

I repeat my question, and I ask for information and with no thought of criticism: Why arsenic in preference to cocain? Let us have opportunity to set the reasons side by side.

I have been impressed by the frequency with which the impenetrable root-canal crops up in our discussions. It has seemed to me to be present in undue proportion, in a *much* greater proportion seemingly than is warrantable. I have inquired of different practitioners as to the treatment of such canals, and as a result have felt impelled to recall a suggestion made by our honored colleague Dr. S. G. Perry some years ago, and independently by Dr. H. C. Meriam later, adding to it the details of certain procedures in which I have much satisfaction when dealing with these so-called impenetrable root-canals. The result of my inquiries above referred to has seemed to point to unsatisfactory equipment for instrumentation as at least a partial cause for the remarkable number of impenetrable canals that are reported. The frequent finding of unfilled and unpenetrated canals that are readily handled by suitable instruments has seemed to corroborate this view.

I think you will be ready to admit that a canal that can be penetrated by *any* instrument can be made reasonably safe from danger. With this as a starting-point, I have modified certain broaches in such a way as to reduce the number of impenetrable canals in my practice to a very small percentage.

Kindly note that the question I raise is not whether every canal can be penetrated and cleaned, but whether the proportion of such canals can be very materially reduced. A well-cleaned canal is safe regardless of the antiseptic used, and a canal that can be cleaned can be filled effectually if not absolutely.

Following Dr. Perry's suggestion, I obtained from a jewelers' supply house a quantity of round Swedish broaches of high grade. Drawing the temper of these to a light blue by inclosing them, as Dr. Perry suggested, in a glass tube, heating evenly, and allowing to cool still inclosed in the tube gives a fine broach of good temper. But still these are not fine enough for the class of canals I have in mind, and this is the point where the round broach as a starting-point and the peculiar qualities of these broaches, become of value. With a fine file these broaches may be reduced to a hair-like fineness and still retain a correct form and quality, whereas the temper of the piano-wire broach causes it to turn under the file and assume an oval shape when reduced to the desired size.

Descriptions of this sort always fail to convey the idea, and I have brought for your inspection broaches prepared in the manner I have attempted to describe. They measure from two to four one-thousandths of an inch in diameter about a half-inch from the tip. It is easy enough to reduce the tips of these broaches to a diameter of one one-thousandth of an inch.



Such broaches as these are readily roughened by rolling on a piece of 00 sand-paper under a stick sufficiently to allow of winding them with a fiber or two of cotton, and they will then prove very effective cleansers of fine canals.

Very likely our supply houses may be willing to furnish us with these very fine broaches, and by the processes at their command it is probable that piano wire can be reduced to similar sizes and still retain its round form. The cost of a gross of these, however, does not much exceed the cost per dozen of the standard Donaldson broach.

Gold clasp wire broaches may be filed down in a similar manner, and used for coaxing acids into fine canals if it is desired to use that process for enlarging them. With such broaches very few canals are impenetrable.

What should be the position of the profession with regard to chronic abscesses? I ask because of the apparent discrepancy between the accepted teachings on this point and the practice of many men in good standing in our profession. The possibilities of loss of the individual tooth and necrosis of surrounding bone seem to me of less importance than certain other considerations.

We as a profession are on guard at the entrance to the digestive apparatus, and failure on our part to keep good conditions in the mouth means probable derangement of the whole digestive system. The constant discharge of even small quantities of pus into the mouth means digestive disorders, slow blood-poisoning, and consequent lowering of the resistive capacity of the system when called upon to throw off the many forms of contagion to which modern conditions constantly expose us.

I frequently hear from patients the statement that they have been advised to let alone chronic fistulæ and that they do no harm. Are there good reasons why chronic alveolar abscesses should be left alone and no attempt made to cure them?

#### *Discussion.*

Dr. JOHN I. HART. I think that we are fortunate in having the excellent paper read by Dr. Gillett this evening, and surely his note of warning as to the retention of teeth that are the source of chronic alveolar abscess is very pertinent. If the tooth that is the source of irritation cannot be brought around to a condition of health, we should have the courage of our convictions and advise its extraction if after proper treatment the removal of the necrotic end has not sufficed to relieve the condition. I think that any abscess of long standing, even if it be not chronic, if it has merely run the course between the subacute and the chronic, is bound to leave the end of the root in a necrotic condition. It is a very simple matter to pack the fistulous tract until it is sufficiently large to pass through to the alveolus, and through that to the apex of the root, a bur of moderate size which has been sterilized, and cut off the end of such a root. This very simple treatment in many instances will serve to remove the source of infection and irritation, and we finally get healthy healing by granulation.

I am very sorry Dr. Gillett did not dwell more fully on the possibilities of the enlargement of root-canals by the Callahan method. I infer from his tone that he did not approve of that method of enlargement. In my opinion, it is possibly one of the best treatments of the kind that has been introduced. I think we are far safer in enlarging roots by this method than we are by the use of instruments rotated in the engine. Where roots are bayonet-shaped at all, we pass through, making false foramina in many instances.

Dr. HENRY G. HATCH. Dr. Gillett has challenged those who still use arsenic to say why they use it, and if I had the time I think I could tell why I do so. I much prefer to devitalize a pulp with arsenic and harden it by the use of tannic acid. Sometimes I leave in the tannic and carbolic acid, which I apply after using the arsenic, a week or two, and take out the pulp when it is stiff and hard and dry, rather than extirpate it immediately,—for several reasons. One reason is: To get the pulp anesthetized you have to have the rubber dam on, and apply the cocain cataphoresis pretty close to an hour; then there is the long, tedious work (in, for instance, a lower molar) to get into the roots. The patient is apt to be pretty well tired out by this time. Then, too, if you happen to leave a little end of pulp, the end becomes revived after the effect of the cocain passes away. I much prefer the arsenic, and do not have any of the trouble that Dr. Gillett speaks of.

The arsenous acid is used in very small quantities (1-100th to 1-120th grain) and allowed to remain a longer time; in some cases three to four days.

Dr. GILLETT. Lest someone else may have misunderstood, as Dr. Hatch did, I would say that I seldom remove pulps by cataphoresis. I use cocain in other ways for this purpose.

Dr. S. L. GOLDSMITH. I want to ask Dr. Gillett a few questions. Are these broaches of any particular Swedish make, or are they obtained of any jewelers' supply house? As to the tempering by the glass tube method: Are a number put in together, or is each one drawn individually?

If the doctor can, in a few words, I would like him to explain his method of removing pulps with cocain without cataphoresis. While it is known to a few, there are many who are not familiar with this most excellent method of forcing cocain into a pulp without the electric current.

I also would like to know whether that method is universally successful in inaccessible root cases. I have attempted to remove pulps with cataphoresis, in cases where there seemed to be an idiosyncrasy against the electric current, or against the absorption of the cocain, and I have had to fall back upon arsenic, probably from my lack of knowledge of his method.

Dr. GILLETT. I want to reinforce, if necessary, some things that have been said. Perhaps I was not quite clear with regard to chronic abscesses. What I had in mind when speaking was not the failure to cure such abscesses, but the apparent fact that many practitioners advise their patients that they should be left alone

entirely,—that they do not need treatment,—that the fact that there is a fistula there is not of any consequence.

With regard to the Callahan method, I was evidently misunderstood. I use it constantly, and find it of great service in just the class of canals in which I use these very small broaches. I habitually use a fine gold broach with the acid, because these other broaches are quickly attacked by the acid. That recalls to my mind the statement by a practitioner in one of the recent journals, that he was using hydrochloric and nitric, or aqua regia. He claims that it does not corrode the steel so quickly.

Dr. GILLETT. In one of my papers on cataphoresis I cited a case in which I had removed a pulp by that method. I see no objection to using cataphoresis in that way, provided you wish to spend the time. I can get cocain into the pulp a great deal quicker than by cataphoresis.

What puzzles me in Dr. Hatch's remarks, is why he uses such a process, in front teeth especially. It seems to me impossible to follow out such a course of procedure and not have badly discolored teeth.

Dr. HATCH. I had in mind those bad cases of molars. I do not use it in front teeth.

Dr. GILLETT. It is not so bad to have a discolored molar as a discolored incisor, but I dislike to see it and I do wish to say most emphatically, as the result of some eight or nine years' continuous use of cocain as a means for removal of pulps, that there is very little discoloration following its use, if the other treatment is carried out properly. These broaches are some that I found at a jewelers' supply house in Maiden Lane. It was my understanding that myself and one or two of my friends took all there were at that time. They were a remnant of a higher grade of broach than they were then importing, but they told me if there was any demand for them they could still be imported. With regard to the tempering, which Dr. Goldsmith asked about, I did not go into that because it has been published two or three times in the journals. Dr. Perry and Dr. Meriam described it fully, and the description was published in the *International Journal* within two years. The procedure is to take a test tube, or preferably a smaller glass tube, and put in as many broaches as you please. Fifteen or twenty is a convenient number to watch. Pass the tube through the Bunsen flame till the broaches are light blue in color. You can see what is going on, and see when the color is even and accurate. The value of that particular process is that you keep the air from the broach and give it an opportunity to cool slowly instead of rapidly.

Dr. FOSSUME. Is the other end of the tube closed?

Dr. GILLETT. Yes; I generally put a cork there. With regard to the process of using cocain which has been asked about, I had been removing pulps with the aid of cocain for years before I began to use cataphoresis, and, as I said before, I can get my cocain into the pulp a great deal quicker in other ways than I can with cataphoresis. The method is not mine. I have no claim whatever



to it, and I have vigorously objected to its being called my method, because the credit is due to other men. Dr. Edward C. Briggs, of Boston, as far as I know, was the first one to suggest it as a regular office procedure. That was in the early 90's. I took up the process as he described it at that time, which was somewhat as follows: Having a point of exposure, select a syringe point which is large enough to cover that point of exposure, not small enough to force into it, but to cover it, so you may avoid crushing the sensitive fibers. I take the point of the ordinary metal water syringe, and with little sections of "joint wire" I make collars or shoulders on the metal points, and use the soft rubber cones of the Dunn syringe to insure a tight joint. By covering the exposure in this way the pressure can be gradually brought to bear and the cocain driven in. I more habitually place cocain crystals in the cavity, place a piece of soft temporary stopping, or more often unvulcanized rubber, such as is used in making plates, just a ball of it, and oftentimes a single push with a broad-pointed instrument will accomplish the desired result. One day this week, a small boy sat in my chair and had a pulp removed in that way, and really there was but a single flinch and not a word of complaint. He would have shown just as much suffering if I pricked his gum with an exploring point in examining for a cavity. I have no objection whatever to cataphoresis for such purposes, except that it takes more time than is worth while in my hands, and I think I have seen one or two cases in which, from the prolonged application of cataphoresis in the attempt to remove pulps there had been irritation set up at the apex. The tissue there has to carry all the current, and by continuing it for a long time it seems to me possible to cause irritation at that point.

One other objection in my own hands to the removal of pulps in molars by cataphoresis would be that the current is very apt to follow the larger branch of the pulp, and that may be the explanation of Dr. Goldsmith's difficulty in getting into fine canals. In such cases it is necessary to do the large canal first, and then block it up so the current must necessarily go the other way.

Dr. GOLDSMITH. How about cases that are almost exposed, but not really so?

Dr. GILLETT. Cataphoresis is helpful as a means of getting at the pulp at the beginning, providing a possibility for painless exposure.

Dr. RALPH B. REITZ. Do you consider it an idiosyncrasy of the patient in those unfavorable cases? For instance, where cataphoresis is applied, and several teeth are affected for days afterward? Have you had any after results of that kind?

Dr. GILLETT. I have never seen those cases. In regard to cataphoresis, I am somewhat in the position of Dr. Hatch with arsenic. I do not seem to have the troubles others describe.

Dr. REITZ. I have had that trouble in cases for days and weeks afterward. Pulps became so involved that they had to be taken out, and I was curious to have your idea in regard to its application as an operative measure, for instance, and then having this

after result,—using it on the gum tissue for the introduction of iodine, and then finding that that side, above and below, had an irritation of the pulps, and in some instances it would not pass away.

Dr. GILLETT. I think some of the things ascribed to cataphoresis have been the results of the misuse of drugs. While I did, at one time suggest the use of iodine, and some other drugs, by cataphoresis, I have used them but little and do not feel competent to express an opinion concerning the cataphoric use of iodine. The point I had particular reference to was irritation set up about the end of the root, following the use of cocaine cataphoresis.

Dr. GOLDSMITH. Dr. Gillett just spoke about ascribing to cataphoresis some of the results that it is not responsible for. A case came to me the other day,—a lower lateral,—in which I had put in a gold filling. The pulp had evidently died, from the symptoms exhibited, and I thought cataphoresis had killed the root; but on looking up the records, I found I had filled it before I had ever used cataphoresis. The pulp had evidently died from some other irritation.

Adjourned.

B. C. NASH, *Secretary*.

---

### NORTHEASTERN DENTAL ASSOCIATION.

THE seventh annual convention of the Northeastern Dental Association was held at Springfield, Mass., October 30 and 31, and November 1, 1901. The meeting was called to order at 11.30 A.M., with the president, Dr. A. J. Flanagan, in the chair.

The morning session was consumed with the transaction of routine business.

At the afternoon session Dr. Flanagan read the

#### PRESIDENT'S ANNUAL ADDRESS,

in which he called attention to the progressive character of the work of the dental profession as evinced in the contributions of numerous scientific investigators, the recent developments in operative procedures, and the development of the scientific principles upon which modern operative methods are based. He referred to the growing and active interest with regard to the need of dental service in the army and navy, and the growing recognition of the importance and utility of dentistry upon the part of the public as shown by the appointment of dentists to the various hospital corps, stating it as his belief that having advanced to a position of public importance, it was now incumbent upon dental practitioners to prove their efficiency and worth in these new relations, stating that "we can have no greater incentive to work and study in the future than to meet successfully what is expected of us in this new field of practice." The attention of the association was

directed to the importance of the National Dental Museum at Washington, in the building up of which he solicited the earnest co-operation of the members.

He called attention to the feeling which had been aroused with reference to the bogus diploma traffic which flooded foreign countries, particularly Germany, with these spurious documents, and expressed the hope that active measures would be taken to remove from our country and our institutions the stigma that such a state of affairs imposed.

With regard to the unification of state standards of requirements, he commended the effort which was being made in the six New England states tending to bring the licensing requirements to a common level, and felt hopeful that the day is not far distant when we shall have a uniform standard, at least in New England. "It may be safely said, that of all states these six are most closely allied in population, education, laws, manners, and common interest, and are therefore in a position to formulate a plan of unification for the common interest and also for the emulation of states outside our territory. Could our society do a greater good than by assisting in this common cause?"

With regard to the management of society work and the conditions tending to successful results therein, he said: "Time was when we had few dental meetings and when it was an easy matter to bring forth a successful issue. That is all of the past, and we have the same general competition in these gatherings that we have had in the world at large. The time should be past when to be known as a "good fellow" is to be mentioned and put forth for society honors. A "good fellow" is generally a bad fellow for legitimate and honest professional advancement. "Let your honors go to those who have done and are doing something,—men capable and willing to do for the common good and thereby lose their innate selfishness. The meetings of the past three years have been brought forth by no chance, but by hard and systematic work on the part of the few; the future will have to be marked by even greater system and work if progress is to be made. I sometimes think that few men are fitted for membership in our societies. True membership entails duties; duties entail work; work entails sacrifices. The older members of the associations, antecedents of this society, found dentistry little better than a secret guarded trade; by honest effort, untiring zeal, and united effort, they handed it to us of the younger generation, a profession. They builded better than they knew, and we cannot be false to our heritage; our forefathers are deserving of a rest, therefore let us take up the burden of advancement on true lines and forever lose the only barrier which has been such a curse to us,—selfishness. Let the cry be, What can I do for dentistry? and not, What has dentistry done for me?"

After a brief discussion of the president's address, Dr. SAMUEL A. HOPKINS, of Boston, Mass., was introduced, and read the following paper:



"SCIENCE AS A TEACHER OF PROPHYLAXIS."\*

Last June I had the honor of reading a paper before the Massachusetts Dental Society on Prophylaxis, which you may have seen in the issue of the DENTAL COSMOS for October. I found so much to say upon this subject that I was obliged to postpone the consideration of many points for another paper which I was invited to read before this society. Looking over my notes, and continuing during the summer my study of the various aspects of this question, I found that even a second paper would not appease my insatiable appetite for space, and I found it necessary to let off steam by running over to New York and talking to the Institute of Stomatology, which I did about a month ago. I have tried, however, to save the best thoughts for this occasion, and if I succeed in gaining from you such kindly appreciation for my work as I received in Boston last June and in New York last month, I shall be highly honored and bountifully rewarded for my labor.

The second paper has not been published yet, and I will briefly give you an outline of it in order that you may the better understand this one. As a matter of fact each paper is complete in itself, and yet I have tried to preserve the continuity of thought from the beginning to the end, so as to cover as far as possible the entire subject.

I referred to Miller's theory as furnishing a working basis upon which to establish a system of preventive treatment. I spoke of the thick, ropy saliva which we sometimes observe in association with rapidly progressing caries, and pointed out that it was a better culture medium than the clear, watery saliva which we believe to be normal. It is because bacteria multiply more rapidly in this ropy, viscid saliva that decay is not unexpected when it is present.

I claimed that caries was one of the curses of civilization and but little known among uncivilized races. I felt that there could be no doubt that the loss of functional activity induced by civilized methods of preparing food was one of the chief factors in producing caries. I pointed out that the large proportion of starchy and saccharine food ingested provided an excellent culture medium for acid-producing bacteria and led to the destruction of the teeth. I referred to the widespread nature of caries, and quoted from others to show that over thirty per cent. of all the teeth of our public school children were defective. I called attention to the effect this condition had in lowering the physical health of the child, in diverting his attention from his studies, and in weakening his moral fiber.

I called attention to some of the diseases of the eye and ear that had their origin in dental lesions. I showed that in nearly all diseases of bacterial origin, bacteria entered the system through the mouth, and I referred to numerous deaths from pyemia, peritonitis, osteitis, and metastatic abscesses which had their origin in carious teeth. I proved, I think, that strong teeth are essential to the best type of manhood, and that deterioration of the teeth meant degeneracy of the race. I expressed the belief that im-

---

\*Copyright, April, 1902, by Samuel A. Hopkins, Boston, Mass.

provement had already begun among the well-to-do classes, but I was impelled to lift up my voice in behalf of the poor. While there are hospitals all over the land for every other imaginable disease, from the Atlantic to the Pacific there is no place, outside of our dental schools, where a patient unable to pay a fee can have a diseased tooth treated by competent hands. This, together with a few suggestions for improving these faulty conditions, was the substance of my last paper.

I have in my life read a goodly number of papers before dental and medical societies, and no one could have received greater consideration and more flattering tributes than I have; and yet, after all my labor, I am not sure that the seed I have sown so widely has borne practical fruit. While I believe that in the entire domain of medicine there is no field which offers such beautiful opportunities for systematic and practical prophylaxis as dentistry, I am time and again made aware of the fact that I am looked upon as a dreamer when I give voice to my views; and I am forced to fall back upon the philosophy of Thoreau for my comfort and justification: "If one advances confidently in the direction of his dreams, and endeavors to live the life he has imagined, he will meet with a success unexpected in common hours. He will put some things behind, will pass an invisible boundary; new, universal, and more liberal laws will begin to establish themselves around and within him; or the old laws will be expanded in his favor in a more liberal sense, and he will live with the license of a higher order of beings. In proportion as he simplifies his life, the laws of the universe will appear less complex, and solitude will not be solitude, nor poverty poverty, nor weakness weakness. If you have built castles in the air, your work need not be lost. That is where they should be; now put the foundations under them."

To put in the foundations will be the object of this address. Three things are essential to the prevention of caries. First, that there should be an adequate supply of nutrition for the building-up of the tooth-structure. Second, that there should be a sufficient amount of exercise of the organs of mastication to enable them to throw off waste material and to take up the pabulum needed for their upbuilding. Third, that environment should be rendered as perfect as possible in order that acid-producing bacteria may have their number and their virulence reduced to a minimum.

In supplying the nutrition we must remember that not only must digestion be complete, but that that more subtle and delicate function which we term assimilation must be performed before the nutritive elements of the food reach their destination and can be taken up by the tissue cells to replace the waste matter which is cast off. This requires a bountiful supply of oxygen, plenty of sunshine, proper exercise, and healthful, restful sleep in well-ventilated rooms. If you are to gain the most perfect results you must begin with the mother before the child is born. That she should be well nourished and be surrounded with every hygienic aid that science can suggest goes without saying, but the oral

specialist has little opportunity to direct or even to suggest at this period, and the dentist ordinarily is obliged to take things as he finds them when the child is first brought to him at, we will say, about the third or fourth year of its life. If up to that time the child has been well nourished, passing from mother's milk to good cow's milk and other wholesome foods, there will be but slight obstruction offered to the success of our plan for improving the tooth-structure. If, on the other hand, the child has been fed since birth on one or more of the various patent foods, we shall be apt to find a condition of the temporary teeth that will discourage the operator and presage a troublesome future for the child. This is not to be interpreted as an attack upon the various substitutes for mother's milk, for I am quite aware that many a life has been saved by such foods when everything else seemed to fail. I have, however, rarely seen a strong, healthy set of teeth built up on such a regimen.

Much can be done, however, even in the most discouraging cases, by proper nutrition, if we can begin the work at an early period. The chemical and physical changes which go on in the body, and which we term metabolism, obey the laws of the conservation of matter and energy, but in determining food values the physiologist takes too little account of the inorganic elements of food which we have come to look upon as important factors in the upbuilding of tooth-structure. The nutritive value or potential energy of food in almost all physiological experiments is measured by heat caloric. A heat caloric is the amount of energy required to raise one kilogram of water one degree Centigrade. In most of the recorded experiments on metabolism in the human body it is usual to prepare the food in such a manner as to do away with the necessity of mastication, thus depriving the teeth and the masticatory muscles of the exercise needed to throw off waste matter and take up fresh pabulum. Moreover, it is impossible to determine, except by post-mortem examination, just what changes have taken place in the bones and teeth as a result of food experiments, while other changes are quickly noted by loss of weight, loss of strength, and reduced measurements, all of which can be readily determined.

We know, however, that animals deprived of mineral salts do not thrive well, and organic food lacking in these salts quickly becomes repugnant to them. Nor can these salts be fed separately to make up for the lack in the food supply. We know not why this is so, because we cannot as yet understand the subtle chemistry of assimilation, but clinical experience accords with scientific experiments in establishing this fact. We know that grain grown upon lands rich in calcium salts is of vastly greater value than that grown upon poor and exhausted lands, and we know that no amount of feeding of lime salts will make up the deficiency. We cannot, then, fail to note the imperative necessity of feeding such foods as have in themselves rich supplies of the nutritive elements which go to make up the structure of the teeth.

Experiments are not lacking to illustrate this fact. Pfaff,



Chadbourne, and others have fed animals for a prolonged period on substances lacking in lime salts and have observed a marked demineralization of the bones and teeth. This was particularly marked in the fixed bones, while the movable bones suffered but little. This points out again the fact already mentioned that active use is a conservator of vital power, and that organs little used suffer most when the nutritive elements are insufficient for the entire organism. While it is true that the greatest changes are invariably found in the bones and teeth of growing animals, the mature animal is shown to suffer also in a marked degree.

The question of how to supply the necessary calcareous matter required for teeth, especially in the formative period, is a difficult one to answer. Any physiology will give tables showing the various food values. Analysis showing the amount of nitrogen, carbon, hydrogen, water, protein, fat, carbohydrates, and ash, of which the various food substances are composed, can readily be found in any medical library, and perfect food rations can be devised upon an accurate scientific basis.

Most of these will fail absolutely, first, because they are rations and we resent any curtailing of our right to select our own foods, and second, because it is difficult to always prepare such rations in a manner to make them attractive and palatable. Where large bodies of men are vigorously employed, as in the army, the difficulty is not so great, but in private life the idiosyncrasies of the individual must be taken into account. One fact, however, impresses itself upon our minds at nearly every meal and suggests a condition not difficult to remedy. That the proportion of starchy and saccharine food in our daily diet is greatly in excess of our needs can scarcely be controverted, nor can it be denied that calcium salts are insufficient. Whole wheat grown upon northern lands rich in lime contains a high percentage of calcium, but we throw away the part richest in calcareous matter when we convert it into fine, white flour.

The average meal of the average American consists of meat and potatoes, white bread, cake, pie or pudding, and tea or coffee. The deficiency in calcium is obvious. Butter, which gives a large percentage of ash and a large number of units of combustion, is too expensive to be used in large quantities by the poor, and it is considered bad form in polite society to use it in large amounts. Large quantities of good wholesome butter would, however, go far to preserve the proper food ratio in our ordinary family diet. If we could substitute whole wheat for the fine flour, we would insure an immense gain. The preparation called shredded wheat seems to me to be especially well adapted to the building up of tooth-structure, because it not only includes all parts of the best northern wheat, but calls for mastication as well. The extreme outside covering of a wheat kernel has no nutritive value and may be exceedingly irritating and cause abnormal peristaltic action of the alimentary tract. In preparing fine flour, however, not only this, but the two following layers, which are rich in phosphates, are thrown away. Milk is a much-neglected article of food, and is

especially indicated in the diet of young people. It should not, however, be used as a "chaser" to wash down unmasticated food. Rye bread, especially the hard Swedish rye bread, is an excellent addition to our diet, and the intelligence of the thoughtful dentist will suggest innumerable improvements in the diet of his patients. As I have said before, no proper ration can be established that will suit an entire family, but much can be done to cut out the starchy and saccharine foods, to supply the necessary lime salts, and to increase the use of the teeth in mastication.

There is a theory which is not without able supporters, that faulty nutrition of teeth and of bones is brought about by the fermentation of starchy foods in the alimentary canal. This produces lactic acid, which, circulating in the blood, holds the lime in solution and prevents its being taken up by the bones and teeth. While this may or may not be true, it is equally well known to the clinician and to the experimenter that after we have supplied the necessary food for the upbuilding of various tissues, and after digestion has been satisfactorily completed, there are still important factors which may interfere with the normal activity of the protoplasm and prevent the proper nourishment of the whole body or of a particular part. Such extraneous influences we will find in certain diatheses, notably the syphilitic and scrofulous, and the pernicious influence of want of fresh air, sunlight, exercise, and proper hygienic conditions in retarding the removal of waste matter and interfering with the activity of the protoplasm are too well known to be dwelt upon. The power of differentiation inherent in the protoplasmic cell is one of the great mysteries of life, and it begins when the ovum is fecundated. As the nutrient pabulum courses through the minute capillaries of the body, each molecule of protoplasm selects the particular nutriment needed for the upbuilding of the particular tissue of which it is a part, leaving other nutrient material to be taken up by the tissues to which it is adapted. By the power of osmosis which belongs to the protoplasm the movement of the nutritive fluids is maintained. The tissue needing nutrient pabulum attracts it by endosmosis and expels or repels the waste by exosmosis. The force which controls this process is what we know as vital power. The changes which go on in the teeth are, as we should expect from the density of the tissue, exceedingly slow. Indeed, it is denied by some authorities that any nutritive change is possible in the enamel substance. There is, however, considerable evidence to show that even enamel, dense as it is, undergoes slight nutritive changes, especially in the young. The fact that the enamel contains 95 per cent. of calcium phosphate and carbonate is not in itself conclusive proof that protoplasmic action does not go on after the tooth is erupted. That the dentin, which contains 70 per cent. of calcium phosphate and carbonate, is actively nourished no one can possibly doubt.

Having provided, then, sufficient nutritive material for the part, having surrounded our patient with excellent general hygienic conditions, having done what we can to overcome the effects of

inherited conditions and faulty diatheses which interfere with nutrition, how shall we improve the vital force which controls the nutrition of the teeth? This brings us to the second part of our paper, which deals with mastication, and we find our answer to the question in the proper and vigorous exercise of the organs of mastication. It has been demonstrated beyond the possibility of argument that the chief factor in tooth-degeneration is loss of function which has been induced by civilized methods of preparing food. The average daily meal does not provide sufficient exercise for the teeth, and we have gradually fallen into the habit of rejecting food that we cannot readily soften or wash down with a draught of water.

It is obvious that, with the most generous supply of nutrient pabulum possible, you cannot keep any organ of the body strong without vigorous use, and if the nutrient pabulum be insufficient for the supply of all the organs, those which are used the least will suffer most by this deficiency. Thus we have seen that animals fed on a diet lacking mineral salts show the effects in a marked manner in the bones of the cranium and other immovable bones, while the bones most actively used are the ones that suffer least during the experiments, because by their activity they attract whatever nutrition there may be in the food supply. It is sheer laziness to assert that we cannot check this downward tendency, for the matter is largely within our control. If it be a process of evolution, what is intelligence given to us for, except to control that evolution? Ever since man emerged from the condition of the ancestral ape and began to be guided by reason instead of instinct, thought has been the supreme factor in the development of mankind. If you think you want strong teeth, and think it hard enough and often enough, you are going to have them. You will find a way to answer your own prayer, if you only believe that the prayer can be answered and are quite sure that you want it answered.

You will be surprised if you question your patients to find how very few of them appreciate that fact,—that vigorous mastication plays such an important part in the conservation of good teeth. Most of them have never thought about it at all. Mark this also, that if we do our duty and urge with sufficient force and persistence the need of proper food and vigorous mastication, if we explain patiently and intelligently the improvement that can be brought about by these means, we will meet with hearty co-operation on the part of the mothers of most of our young patients. They don't pay us hundreds of dollars a year and suffer pain and inconvenience from any philanthropic motive directed toward our support. They will reduce our incomes just as much and as rapidly as they can, if we will only tell them how. Surely there is no craven spirit in our profession who would not gladly substitute prevention for cure! That it can be done, and the reformation started at once, is self-evident.

Your own intelligence will suggest what foods to recommend. I have spoken of shredded wheat. I am, however, unwilling to



take the risk of seeming to advertise any food preparation, but such things as will bring powerfully into play the organs of mastication should form a part of every meal. There are many of them, and you will find that your patients will soon delight in crunching tough, hard substances, and will thank you for the knowledge that enables them thus to improve the condition of their teeth.

In our private practice we shall have little difficulty in making marked progress in prophylaxis if we but keep our ideals high and strive diligently to attain them. It is the condition of the teeth of the poor that causes us dismay, and we are alarmed at the possibilities the future holds in store for us. It is not only that the comfort and physical well-being of the poor demand that some provision for the care of their teeth be made, but good government and good citizenship demand it. The best types of manhood have always had, and of necessity must have, strong teeth. Degeneration of teeth means degeneration of the race, physically, mentally, and morally.

An entire chapter might well be given to the question of what we shall do with or for the teeth of our poor, but the limits of this paper make it impossible for me to dwell upon the subject at the present time. I must hasten on to a consideration of the third part of our subject. Having provided nourishment for the tooth-structure and having taught proper mastication, we must still contend against the influence of acid-producing bacteria and reduce their activity to a minimum. We have gone far in this direction when we have reduced the proportion of starchy food to somewhere near its normal amount, for it is well known that lactic acid is produced by the fermentation of starchy and saccharine foods brought about by bacterial activity. We have only to remember the oft-quoted illustration of bakers' teeth to acknowledge the truth of this proposition. We lessen the possibility of bacterial activity when we induce our patients to chew tougher foods, for the teeth during such thorough mastication become highly polished and the formation of gelatinous plaques is greatly retarded.

If each tooth could be kept in a highly polished condition it would hardly be necessary to mention prophylaxis. The next time you are obliged to extract a permanent tooth (and I trust it will not come soon!), if it be a tooth covered with rather poor enamel, just try the experiment of seeing how highly the enamel can be polished. You will be astonished, if you have never tried the experiment, to see the result. Now subject this highly polished tooth to the action of an acid, together with a tooth that has not been polished, and you will be surprised to see how much more resistant the polished tooth is than the unpolished one. Exactly the same difference exists in the mouth. The side on which the greatest amount of chewing is done will offer the greatest resistance to caries, not only because the teeth are better nourished, but because the enamel is highly polished and affords less opportunity for the attachment of bacteria.

You are familiar with Dr. D. D. Smith's method of fortnightly polishing the teeth with orange-wood and pumice, and it has my hearty endorsement. Perhaps to get the best results one ought to be as forceful and arbitrary as is Dr. Smith. He certainly has the courage of his convictions, though I fancy that most of us would have difficulty in fitting every case to the same mold. There is, however, not the slightest doubt of the efficiency of frequent polishing with a stick and pumice, and if we can control our practice so that we can see the little ones every few weeks, we can promise to save them every severely painful operation and bring them to maturity with a vigorously healthy set of teeth. This is assuming, of course, that the teeth are regular and the articulation good. Irregularities make it impossible to cleanse the teeth thoroughly, and a faulty articulation deprives the teeth of the exercise which I have pointed out as necessary to proper nutrition.

I have referred to what might be termed pathological saliva of a thick, ropy nature as being a better culture medium for bacteria than the normal secretion of the salivary glands, and, because it lends itself to the development of bacteria, active caries is frequently found associated with it. I am almost sorry to mention the subject again, because it comprises so much that time will not permit of its proper consideration. Still, it is a potent factor in inducing caries and we must devise means of getting rid of it. It will be noticed that it is most frequent when the patient is physically below par, when exhaustion from mental or nervous strain has lowered his vitality, and the remedy is found in rest, fresh air and exercise and proper nutrition, with the possible addition of a tonic. It will also be found that neglect to exercise the organs of mastication and a catarrhal state of the mucous membrane will contribute to this condition. Your experience will indicate a remedy when you have ascertained the cause. I only wish to say that the cure will not be found in strong mouth-washes, which will only irritate the mucous membrane and prevent a healthy normal action. Carbolic acid, formalin, mercury bichlorid, oil of cassia, oil of cinnamon, and many other antiseptics which are in common use are irritating to the mucous membrane and are contraindicated as daily washes for the mouth. Indeed, it is doubtful if the ideal mouth-wash has yet been invented. Any preparation that is sufficiently strong to destroy or even retard the growth of bacteria for any length of time is open to the suspicion of being too strong to be used without some restrictions. My experience with mouth-washes, including those I have myself devised, has been rather disappointing, and I am inclined to think that a pleasant, harmless, though inefficient wash which will induce the patient to cleanse his teeth and will make that operation an agreeable one, is still entitled to the palm. If we cut off the supply of starchy foods and stop the everlasting munching of crackers between meals, if we keep the teeth well polished by mastication and frequent applications of the orange-wood stick and pumice, there will follow a diminution of the bacteria which affect the teeth.

Please do not interpret what I have said into a denial of the efficacy of mouth-washes in certain conditions. No one wash, however, will suit all conditions. It is, perhaps, possible that a mouth-wash may be discovered that will thoroughly destroy the bacteria of the mouth without compensating injury, but before it is done I shall hope that the natural methods I have suggested will prevail to render it unnecessary.

I come now to the subject of cleansing the teeth and mouth by the patient himself. I will not insult your intelligence by telling you how it should be done, but I will urge you to take advantage of every opportunity to instruct your patient in this matter. Above all, insist upon the night cleansing being performed as thoroughly as possible, and let him not forget to cleanse the tongue at all times as well as the teeth. You will restrain your patient if you find that his methods of using the brush and silk make up in vigor and earnestness what is lacking in skill; you will prod the lazy and encourage the conscientious. By every appeal to self-respect, to vanity, to cupidity, to physical well-being and comfort, you will strive to make the patient see the necessity of caring for his teeth from your point of view; and you will succeed. If you are lazy and indifferent to the subject your patients will take little interest in the matter, and you will be rewarded by having many large fillings to put in, by having numerous exposed pulps and dead teeth to treat, and by having many artificial substitutes to construct. If, on the other hand, your aim is high, you will be surprised at the amount of good you can do by simply accepting science as a teacher of prophylaxis and by following her guidance.

#### *Discussion.*

Dr. GUSTAVE P. WIKSELL. I have had great pleasure in listening to the paper read by Dr. Hopkins, and cannot resist the temptation to make a few remarks upon it. I heard the paper which he read before the Massachusetts Association also. To my mind it is, as he tells you, the chemistry of diet that is the most useful direction in which we may study the cause and cure of these diseases. I for one shall never be satisfied until the dentists are all wiped off the earth. I want to make a plea for the outer coat of the wheat. I can show you that every portion of the outer coat is digestible. You know that in pure water glass is digestible. We have to get pure water, that curiosity of the laboratory, from plants. It has to be distilled in very small quantities. Now in our daily diet we take in pure water, and in the delicate process of digestion there is enough pure water to make these mineral salts digestible. The methods of milling within the last few years may give us some encouragement. Out of 7000 pounds of best wheat, I believe only 700 or 800 pounds go into the beautiful angel-food cake flour. The wheat goes through eighty processes in the modern mill. This they make into five of six grades of flour, the lower ones being greater in food value and also lower in price, so that there is some hope for the poor people that they may get better food than they could fifteen years ago. They are getting more of the inner coats also because of the process of prepara-



tion. On the point of the nourishment of the enamel, I positively know that the enamel can be nourished, making changes in its structure, and this even after a person is twenty or even thirty years old. I had a patient come to me about twelve years ago,—he is a young man here in the building,—and his teeth were in the most discouraging state I have ever seen, the enamel all breaking down. I told him, "I cannot advise you to do anything to them but patch them up with cement." However, after three or four years of that kind of work, I found that his teeth were in fine condition, for the enamel had changed in its character and grown hard and as nice as ivory, and I went to work and then restored his teeth permanently. What caused it was that at that time he went to work in the Educator Food store, and he is to-day working there. He used to take the water crackers made of whole wheat flour and water and eat them, and after less than two years he noticed a change in other ways. From that time until now I cannot see that the teeth have changed a particle. This "Educator" cracker, you know, was made by a dentist who saw that the people did not chew their food enough. He made these crackers after forty-three years of dental practice and devised them as exercisers of the jaw.

Dr. LEVI C. TAYLOR. I wish to say a few words upon this subject. I was very much pleased with the paper as a whole, and especially with the name, "Science as a Teacher of Prophylaxis." Dr. Patrick once asked the National Association what it meant by so frequent use of the term "science," and no one seemed ready to define it. When he himself was asked to define it he said, "Anything that can be demonstrated." You ask an educated man to define it, and he will say, "systematized facts." Prophylaxis can be demonstrated, consequently it may be considered a science. I like the paper very much for the reason that he finally comes to the scientific part of it, something he can demonstrate.

To take care of the teeth properly we must polish them frequently. We, as dentists, must do it ourselves, and not, as the Chicago dentist advocates, advise our patients to clean their own teeth. Though we prescribe this and that remedy, we cannot expect our patients to do the work well, if we are not interested in it. We dentists must clean the teeth well ourselves. Whether we know how or not, few of us do this work well. It must all, or very nearly all, be done by hand. Machine work will not reach up under the gum, and polish that line of coating which is always found there, and which if allowed to remain will cause an erosion of the tooth and soon become a bacteria bed, producing no end of trouble. If we polish off that portion of the tooth readily reached with the machine, the work thus far will be done so well that we have lost our guide to determine by the sense of feeling when the work is properly done under the gum. Do our hand-work first and we shall find little to do with the machine later.

Gentlemen, when we thoroughly understand this matter, and are faithful to our patients, urging them to come every one, two, or three months to have their teeth thoroughly cleaned, polished,

and massaged, they will soon take an interest and ask, "Doctor, what can I do to care for my own teeth between times?" Then, and not till then, can we make suggestions that will be of much value. Many of us put a mouth in order, as we call it, but we leave the bacteria bed on the teeth for patients to rub the food over, take a glass of water and wash it down, then wonder why they have dyspepsia. We should first give them a clean mouth, then teach them to chew their food well, using no moisture except the saliva. Such eating will, in most cases, cure dyspepsia. People do not use their teeth sufficiently.

As regards faulty occlusion, that is a thing which ought to be corrected in all young patients. That is a great drawback in any case, but a patient may derive great benefit by being induced to chew, and chew something hard. Chew hard food, chew it slowly, so as to milk every gland, and chew it until it can be readily swallowed without any water. We shall then correct much of the trouble.

I once had a patient whose front teeth alone shut together properly. I advised gum-chewing, and the increased action demanded of the masseter muscles brought the rest of the teeth into absolutely perfect occlusion within a few months, when the young man began to eat his food with comfort and pleasure. When the hygiene of the mouth is properly looked after, the general health of the patient improves accordingly.

Dr. FAXON. I do not know if it be right for me to take the time of the association after two such intelligent men, who have well studied the subject, have addressed you, but there are one or two points I would like to bring up. Dr. Hopkins seems to think with others that assimilation is the sticking-point. I hope Dr. Hopkins will follow it up until he has settled that point. I think he is in a fair way to do it. I was surprised to hear him mention the fact that the outer layer of the wheat had no nutrition in it, for I have been led to suppose that that was the part which contained the phosphorus of the wheat, and I hope he will, in speaking of his paper, answer that question. It is a question of value to me, and I presume to the rest of those congregated here. There is one thing which has been in my mind for some time,—I believe it is better to bring it up here than in any other place,—and that is the subject of feeding for the nutrition of the teeth. Some little time ago I read that the physicians of Chicago had undertaken the matter of feeding the children in some sanitarium to see what effect the different foods would have in different diseases; and it has occurred to me that if it had not already been brought to the notice of some of the dentists of Chicago, some of them might watch the experiment and see what effect it had on the teeth. I think if this could be done it would prove of benefit to the profession along that line. I know, of course, that Dr. Wiksell has a great deal of faith in the Educator cracker as a food for the teeth; and that it has a tendency to harden the teeth and provide nutrition I do firmly believe. Yet I have patients who have chewed bushels of these crackers but have never shown any improvement.

Dr. STOCKWELL. I want to hear from Dr. Barrett on this subject.

Dr. W. C. BARRETT. I have heard the paper as I have before now listened to one of the symphonies of Beethoven; it was so beautiful in expression that sometimes I was inclined to forget its utilitarian part in my enjoyment of the delicacy and grace of the language in which the thoughts are clothed. I have not listened to a paper for a long time with so much personal pleasure as that I have enjoyed in hearing this one. But I never yet have heard a paper, read a book, or listened to a sermon that contained only that to which I could give full credence. That is, my mind and habits of thought are sufficiently critical to lead me to question something, and I find room for doubt in some of the statements even of this admirable presentation. Some of the beautiful theories elaborated are to my apprehension in antagonism with certain organic principles. Physiological deduction must so often be modified by developmental facts that we are scarcely warranted in assuming as a law of function that which is, or may be, dependent upon structural changes that are themselves the result of accidental environment. For instance, we are and often have been told that proper nutrition demands the use of the whole grain of wheat, and especially its outer coatings. But the external envelope is but a layer of inorganic silica designed to exclude moisture that fermentation and germination may not be prematurely set up. It contains no nutrient particles whatever. The paper has been very suggestive and instructive to me or it would not have aroused these antagonistic thoughts, which are never induced by platitudes and commonplaces.

Dr. MAXFIELD. I want to say a few words to express my appreciation of the scientific paper Dr. Hopkins has presented to us to-day. Five years ago Dr. Black brought out the theory that caries of the teeth was wholly caused by their environment. Now Dr. Hopkins goes farther than this, and proves that lack of nutrition is just as important a factor. Dr. Black said there was no such thing as soft or hard teeth, yet clinical experience shows that the texture of the teeth will sometimes be softer than at others, and this I believe is caused by lack of nutrition. I think we shall receive much benefit from Dr. Hopkins' studies and experiments in this line. Fifteen or twenty years ago we heard a great deal in regard to the food we ate,—that is, we should give foods containing large quantities of lime salts in order to feed the teeth; but that theory has all passed away. As a result of this theory Dr. Black now advocates the cutting away of sound tooth-structure to reach what he calls the zone of immunity from caries. I cannot accept this theory, and I believe there will be a reaction from this teaching.

In regard to cleaning the teeth, we cannot all do as Dr. Taylor advises; we must direct our patients what to do. I do not know why it is, but almost everyone when speaking on this subject always says, Use orange-wood. I prefer a softer wood for this purpose, and I have not found anything so good as a white pine



stick. I do not think much of the hard wood polishing-points for use in the engine. You know they last a long time before they wear out. A good substitute for these,—and this idea was given me by Dr. Dowsley,—is to use a piece of a match; they are made of soft pine, are easily and quickly whittled to the shape you want, and you also have something which your patient can see you have never used for anyone else.

Dr. DOWSLEY. I have nothing to say on this subject, but there is a gentleman in the room whom I should very much like to hear from. I mean Dr. Kirk.

Dr. E. C. KIRK. Mr. President and gentlemen, I am glad to say something on the topic of Dr. Hopkins' paper, for it seems to me there is one point which has been left uncovered. If the essayist has been building air castles he is certainly proceeding to put the foundations under his structure. For one I am very glad that Dr. Hopkins has had the courage to put this subject before you. It has often struck me that when a man gives earnest thought to any subject, here and there throughout the world we find men who are working along the same or similar lines, and the several men who are working in the field which the essayist has presented will ultimately puzzle out these questions of nutrition of the tooth-structure. The one point under discussion here seems to be, Is it possible to affect the nutrition of the tooth after its eruption; and the implication seems to be that if we can favorably affect the nutrition of the tooth we may, by that process, prevent or modify carious action. In reply to Dr. Maxfield, I wish to say that I think he has misrepresented Dr. Black's position. Dr. Black did say in effect that caries is practically a question of the tooth's environment. The only man who has had the temerity to contest that is Dr. Eben M. Flagg, who lately presented a paper before the Odontological Society of New York, claiming that caries was an infectious disorder due to the transmission of bacteria by the blood-stream into the pulp, thence out upon the enamel surface; and he states that he has actually seen the carious eruption upon the tooth-surface. As a matter of fact, from scientific research it has been shown that caries of the teeth is a condition of the environment of the tooth, and it is also true that the question of density has little or nothing to do with the process. Density of the tooth-structure is not a protection against decay. Every man here has seen mouths in which there was no evidence of decay,—that have a perfect immunity to dental caries; and it is this point that I hoped Dr. Hopkins would bring out. It needs a concurrence of factors to produce dental caries. In the country we see numerous stacks of hay. There are also numerous small boys, some of whom may have the desire to set fire to the haystacks. In order to make a conflagration of the haystacks practicable to the small boy, there must be matches. The combination of these three makes perfection of the scheme. Similarly with this question of nutrition, it is the result of a complexus of conditions. What I extract from this discussion is that a well-nourished tooth is evidence of a well-nourished body,—that the nutrition of the in-

dividual in such a case is raised to the maximum, and among other things produced thereby is a good tooth. A maximum nutrition produces a condition of bodily vitality which prevents the invasion of bacteria. This disease, caries of the teeth, represents some aberration from normal nutrition and a lowered vital resistance. Every man has in his mouth particular forms of bacteria which under certain circumstances will produce disease. One man becomes infected, another does not.

We must go farther back than the study of tooth-structure if we would prevent caries of the teeth. I think the work which has been done recently by Dr. Michaels, of Paris, has a bearing upon the solving of this problem and in due course will, I believe, throw an exceedingly large amount of light upon this question, but until we know something definite about it we must do the best we can, for I feel that we are as yet but groping in the dark. What we want first is to get to a clear and precise explanation of those conditions existing in so many mouths which are absolutely free from caries.

Dr. E. A. BOGUE, of New York. As you have been so kind as to ask me to say what I think, I can put part of it into words by restating the old. Dr. Hopkins overwhelmed me the other night in New York with his paper on this same subject, and I have brought to my mind one or two matters that I may probably be pardoned for bringing up under a little different form. Dr. Hopkins spoke of savages being little troubled by decaying teeth. It is the old rule of the survival of the fittest. When we go into museums and find there the teeth of which Dr. Hopkins speaks, it will be noticed that they are the teeth of adults. What is the matter? Those who were not strong did not survive, and those who were sufficiently strong to survive carried with them the good teeth which we look upon; it seems to me that that is one explanation of the phenomenon of which Dr. Hopkins speaks. Again, when these subjects survived, the same force which produced good teeth generally produced regular dental arches useful in the mastication of the hard food. Now, coming to these children of the savages who do not survive. I spoke the other night of the skull of a child of this kind. The skull was not the work of careful breeding. Disease had carried off the child at the age of six or seven years. The first permanent molars are very well formed, and almost all the teeth are like those which any of us see among our best patients, while the second permanent molars, which are not fully formed, and are not due for five or six years yet, are so defective that there are points in them into which you can put a pin. Now, had that child lived until adult life those teeth would have erupted with the holes in them.

One more point that is also not new. I know a gentleman who is fifty-two years of age. He was born in Russia in good circumstances, and his teeth were so well formed that at that age,—at fifty-two,—he told me upon his honor that he had never had a tooth-brush in his mouth, and yet the teeth were perfectly clean. What did it? Simply nature had performed her work so well that

this man, by the very act of mastication and thorough rinsing of the mouth with several glasses of water after each meal, was able to produce results which Dr. Hopkins has so ably urged upon us, namely, cleanliness. His teeth did not decay and did not find themselves covered with tartar.

Dr. McMANUS. There were some remarks made in regard to the use of orange-wood sticks for polishing teeth. Some years ago I got into the habit of using red cedar,—getting it and cutting it up and using it to polish teeth with. Now for about fifteen years I have used this instead of anything else. It is pleasant and it is as effectual as any other wood, in my opinion. One of my patients saw me preparing a stick, and he said to me, “I can give you something that will answer better than that way of doing.” I said “How is that?” he replied, “You perhaps do not know that I manufacture piano-actions, and can send you cedar sticks if you want them.” He then told me that there were a great many of the hammer handles that were thrown out because they were not perfect. He sent me up a bundle of about two hundred, and in my opinion they make the nicest thing which can be used for polishing the teeth. I think if you try them you will find that they are superior to the orange-wood.

Dr. RIDER. I wish to make a single remark, and that is that I defy any of you men here to polish teeth with pumice. You may think that you do get a polished surface, but you cannot do it. You put that surface which you think is polished under a glass and it looks like ice which has been swept off and, as far as cleaning is concerned, it is worse than it was before. There is not a surface in the mouth that has not a smoother polish than you can get with pumice stone, and I for one do not believe in it.

(To be continued.)

---

## EDITORIAL.

---

### “A HIGHER ENTRANCE STANDARD.”

For several years past a lively activity has been noticeable in all of the forces which are tending to enlarge the curriculum of dental education and to safeguard the advances made by means of appropriate legislation. The heterogeneous educational methods of a decade ago are being rapidly harmonized until something like order with respect to the nature and extent of the curriculum has, in America at least, been evolved. We are as yet by no means of one mind as to how dentistry shall be taught, nor do we all agree as to what shall be taught to the student in order to equip him as an efficient practitioner, but lacking complete harmony on these points our present position as compared with the state of affairs existing only a decade ago is an immense stride toward unanimity and order.



A correlative advance has been made with respect to our notions regarding the preparatory education of the student preliminary to entrance upon dental professional study. The dental profession at large has supported the dental colleges with scarcely a dissenting voice in the demand for a higher entrance standard. Educators have realized from sad experience that their best endeavors are inadequate and end in comparative or even signal failure to train students whose early education is insufficient to enable them to comprehend the instruction given or practically utilize it in their professional careers. Dental examining boards have found deficiencies in the preliminary training possessed in many instances by the products of the colleges; the profession and the public have realized the need of improvement in this respect, and the general demand for better elementary training for the prospective dental student is being met.

But not infrequently some thoughtful speaker at a dental convention or a contributor to our periodical literature, with the courage of his convictions asks the pertinent question, Does the higher preliminary standard of education now demanded of those entering upon the dental course guarantee in all cases the production of a more highly qualified practitioner? Are we not making more so-called "theorists" and fewer so-called "practical" dentists? Then follows a plea for the selection of men of mechanical instincts and the suggestion that more practical native ingenuity and finger skill, with less Latin, mathematics, and language would better fit the student for the study of dentistry.

It is a wise thing always to fairly consider the suggestion of one whose experience is the father of his thought, and the suggestions above referred to are usually made by those whose experience has emboldened them to ask questions of that kind. We say emboldened them, because, in view of the general belief in the need for a higher entrance standard, we are of opinion that it requires no small degree of moral courage to publicly question the expressed will of the great majority on such a matter. Let us therefore examine briefly the suggestion that the present standard of entrance requirement is not all that it might be, and determine if possible whether its fitness as a preliminary to dental professional training may be justly called in question.

What do we mean when we ask for a higher standard of preliminary education? Evidently a higher standard was called for with the intention of making better dental practitioners, and the present standard was arranged in response to that demand. The question then resolves itself into whether the present standard

adequately fulfills its purpose. The term "higher" as applied to the standard is purely relative; it is essentially comparative in its significance, and in so far as the present standard brings to the colleges men better trained in habits of study, with reasoning powers more highly developed and with a fairly liberal knowledge of language and mathematics and something of the humanities, no one can gainsay the fact that those so trained will absorb the theoretic training of the course and by reason of their better education be more intelligent and acceptable practitioners in a professional as well as in a social sense than those whose early training was lacking in the elements referred to. We cannot forego these elements gained for the practitioner of the future as a result of the higher entrance requirement. If dentistry is what we claim for it, a branch of medical science, then to sustain that claim and give it a worthy position in the public view as compared with its sister specialties, its exponents must possess such a degree of intelligence and liberal culture as will command a respect commensurate with the intrinsic importance and dignity of the profession they represent. And the complete course of training which the best high schools of the states afford is for the present none too great a preliminary training for the student who later as a practitioner may hope to attain the professional status referred to.

But the plea for better manipulative training must be met. The dentist, be he ever so good a theorist, is a practical failure without manipulative skill,—the ability to create with his fingers and realize in material forms the results which his intelligence originates. It is folly and, worse than that, it is false pretense to claim that the technical training of the dental course can give to a student the mechanical sense and skill for which he has no natural aptitude. There are individuals lacking in this natural endowment, just as there are those who are tone-deaf, and these latter very early learn that they are by nature hopelessly excluded from musical careers. The entrance standard should exclude all who are lacking in mechanical aptitude and admit only those who, other things being equal, possess it. Our entrance standard will never be truly a higher standard until it is made selective in character with respect to the fitness of men to enter upon the dental course.

We have before called attention to the importance of arranging our educational standards with reference to their quality as well as to their quantity.\* At present any standard high school diploma

---

\*"The Qualitative Factor in the Preliminary Dental Educational Requirement," *Items of Interest*, January, 1900.

will confer educationally the right of entrance to the dental colleges of the National Association of Dental Faculties. In New York the present law permits the issuance of a dental student's certificate to the holder of thirty-six academic counts, but these counts may at the option of the student be made up from pass marks in branches of his own selection from a list of subjects aggregating sixty-two in number;—a system which totally ignores the vital question of adaptation of means to ends in education, and says in effect that any group of a specified extent is as good as any other group of studies of the same extent as a preparation for the study of dentistry. This is a fundamental and fatal error. We already know that all men are not naturally qualified to become dentists any more than they are all qualified to follow any other specified pursuit. The next step in dental education must be the frank and square recognition of the fact that only those whose natural qualification and preliminary training give evidence of proper fitness to successfully pursue the dental course should be permitted to enter upon it. Our entrance standard must include a test of these qualities, the old method of permitting students to waste a year or more in a dental college vainly endeavoring to discover and develop a mechanical sense and dexterity which is congenitally absent must be abandoned, in justice to the student and for the credit of our institutions.

We are pleased to learn that the Regents of the University of the State of New York have this question under thoughtful consideration with the intention of offering a special group of subjects selected with reference to preparation for the dental professional course and embracing a definite amount of manual training work which will doubtless be offered as a standard upon which the dental student's certificate will be hereafter issued.

The recognition of this need for a selective quality in the entrance standard is not a local but a general matter. Educators as well as the profession at large have given frequent expression to it in various ways. It has long been recognized as one of the foundation principles of educational systems. It was voiced by Mr. Herbert Spencer nearly half a century ago, since when as a working principle it has revolutionized and vitalized educational work in all departments of human inquiry. Its application to dental education was pointed out by Sir Michael Foster in his Cambridge address at the last meeting of the International Dental Federation, and it should be practically utilized in our entrance standards as soon as expediency will permit, for they will not be truly high standards until it is done.



## PASSING OF THE "FIRST GRADUATING CLASS IN DENTISTRY."

WE publish in the current issue portraits of Dr. Richard Covington Mackall, of Elkton, and Dr. Robert Arthur, of Baltimore; they constituting the first graduating class of the Baltimore College of Dental Surgery, having received the D.D.S. degree in 1841.

Dr. Mackall's obituary appears at page 523 of this issue. Dr. Arthur died June 22, 1880. The death of Dr. Mackall is an event in the history of dentistry of more than passing interest. We are accustomed to regard the pioneer period of dentistry in America as at least remote enough to be beyond the span of an existing professional life. The changes and developments which have marked professional progress since the establishment of the first institution in the world exclusively devoted to the education of dental practitioners have been so rapid and extensive that it seems almost impossible to realize that the scope of one human life could have furnished opportunity to witness them all. It was not generally known among dentists, until comparatively recently, that Dr. Mackall was living.

In 1887, or until that time, it was generally believed that the late W. W. H. Thackston, of Farmville, Virginia, was the oldest living graduate of dentistry, he having received his diploma from the same institution in 1842. Under that impression, Dr. Thackston was introduced by Dr. Taft at the meeting of the Ninth International Medical Congress, held in Washington in September, 1887, as the oldest living graduate of dentistry. In the DENTAL COSMOS for December, 1887, we editorially called attention to the misapprehension, and to the fact that Dr. Mackall was still living in Elkton, Md., which brought out a congratulatory letter from Dr. Thackston, published in the DENTAL COSMOS for January, 1888, in which he gracefully accorded to Dr. Mackall the precedence in the date of his graduation. The mistake was doubtless due to the fact that Dr. Mackall practiced dentistry but a short time after his graduation, and to his connection with the practice of medicine, which had given rise to the belief that his death had occurred even previously to the death of his classmate.

We are confident that our readers will appreciate the portraits of these two historic men, the first in the world to receive the degree of Doctor of Dental Surgery. We are indebted to Mr. W. H. Mackall for the excellent portrait of his father, and to him also, as well as to Mr. V. M. Torbert, editor of the *Cecil Whig*, for the data covering Dr. Mackall's career. Our thanks are also due to Dr. Chas. McManus, of Hartford, for the privilege of reproducing the excellent portrait of Dr. Robert Arthur.

## A CORRECTION.

IN the Iowa State Dental Society meeting report (DENTAL COSMOS for March, p. 257) Dr. A. C. Hewett's "Topical Local Anesthetic" formula, which was incorrectly given in the copy furnished us, should read as follows:

R—Cocain hyd., gr. xlvij;  
 Chloral hyd., gr. xx;  
 Echafolta, f3ij;  
 Glycerin, f3ij;  
 Aq. pur. ad f3j. M.

Also, in his remarks on p. 259, first line, for "every two minutes," etc., read "every fifteen minutes for two hours; thence on, the same dose at intervals of two hours."

---

 BIBLIOGRAPHICAL.
 

---

MANUAL OF CHEMISTRY: A GUIDE TO LECTURES AND LABORATORY WORK FOR BEGINNERS IN CHEMISTRY. A Text-book specially adapted for Students of Medicine, Pharmacy, and Dentistry. By W. SIMON, Ph.D., M.D., Professor of Chemistry in the College of Physicians and Surgeons, Baltimore, in the Maryland College of Pharmacy, and in the Baltimore College of Dental Surgery. Seventh Edition, thoroughly Revised, with 66 illustrations, 1 colored spectra plate, and 8 colored plates representing 64 chemical reactions. Pp. 591 and index. Price, cloth, \$3.00. Philadelphia and New York: Lea Brothers & Co., 1901.

The mere fact that a text-book has reached its seventh edition is of itself presumptive evidence that the work has acceptably filled its special field. Chemistry with its immense scope, dealing as it does with the composition and mutations of all kinds of matter, covers such a wide field,—infinite almost in extent,—that its specialization long ago became a matter of necessity, no human mind being capable of compassing the entire subject. The departments covered by the work under consideration are sufficiently set forth in the title of the book.

The growth of medical science has necessarily taken place in connection with a more thorough and intimate investigation of the composition and structure of the human body, and its functioning under both normal and abnormal conditions. The development of a keener interest and a more persistent and continuous inquiry into these problems has brought with it a corresponding development

of the science of physiological chemistry; and not only that, but it has wrought a complete revolution in the methods of investigation and of instruction in medicine by the introduction of laboratory methods and precise methods of scientific research. Within comparatively recent years all that might be properly included under the term "physiological chemistry" was of such limited extent as to occupy the position of a modest addendum to works upon the general subject of chemistry.

The problems of physiology and pathology are coming more and more to be problems of chemistry and physics. The metabolic processes whereby, through cell agency, the supply of pabulum is converted into energy, tissue, and waste are, in their final analysis, chemical changes notwithstanding their apparent complexity or their vital association. The volume before us is a practical evidence of the extent to which the science of physiological chemistry has grown. The special chemistry dealing with the composition of the human body, the chemistry of its physiological and pathological processes, the important bearing which alterations in metabolism bear to health and disease, the enormous influence of bacterial agencies in disturbing the vital chemical processes of the economy, are all clearly and elaborately set forth. The side-lights which this work throws upon the problems of physiology not only illuminate that subject, but show to what an enormous extent nutritional changes are expressions of vital chemical processes which take place in accordance with laws entirely in harmony with chemical activities in general. It is an exhibit of those fundamental conditions and principles without which a rational conception of the vital functions of the animal body is impossible. It is a matter of eminent satisfaction to be able to find in a text-book the scientific data which one seeks in the solution of the special problems presented by medical practice in any of its departments. We know of no special work of this character which is so eminently characterized by that quality as the work before us.

To the student of dental pathology the work is of peculiar interest, as the chemistry of many of the disease processes which have oral manifestations is set forth with much clearness and detail. The recently awakened interest in the pathology of the oral fluids must necessarily lead to a closer inquiry into the composition of salivary secretion, and the student of that subject will find much valuable aid embodied in this work.

We know of no book in the same field which so adequately meets the needs of the dental practitioner in the study of physiological chemistry as the one under consideration.



OUR TEETH: HOW TO TAKE CARE OF THEM. By VICTOR C. BELL, A.B., D.D.S. Third Edition, carefully Revised. New York: Young America Publishing Co., 111 Fifth Ave.

We reviewed this book at some length upon the appearance of the second edition, and called attention to a number of features wherein we suggested possible improvements. We are glad to say that the revised edition before us has benefited by the criticism and is, we think, greatly improved thereby. There are a few minor features yet, which we think could be revised with advantage to the work, and we doubt not that, as succeeding editions appear, the author will continue to improve the result so as to place it beyond criticism. We notice at page 23 this statement: "Saliva helps to digest the food after it has reached the stomach." This may possibly be a simple *lapsus calami*,—for if the saliva has any digestive property at all, it is exerted upon the food before it reaches the stomach.

Again, it is not sufficiently definite to say, "Through the center of the dentin is a canal filled with pulp." Would it not improve matters to say, "a canal filled with an organ called the pulp?"

It is also, in our judgment, rather erroneous teaching to say that the back teeth are made square so that we can chop the food fine enough to swallow. Why not teach children the fact that the molars are grinders? We note on page 66 of the book that the illustration there portrayed is inverted.

On the whole the work is well done, and we are glad to see the continued evidences of improvement which it manifests, because we believe a book of this character to be capable of furnishing much valuable information to the children who constitute the rising generation.

---

## OBITUARY.

---

### DR. RICHARD C. MACKALL.

DIED at his home in Elkton, Cecil county, Md., on February 16, 1902, after a brief illness from paralysis, RICHARD COVINGTON MACKALL, D.D.S., M.D.

Dr. Mackall was born at Wilna, near Elkton, Md., on January 14, 1822. He was educated at the New London and Belair Academies, and in 1839, about his eighteenth year, was sent to Baltimore to study dentistry under the preceptorship of his uncle, Leonard Mackall, M.D., a practitioner of eminence in that city. He entered as a student in the Baltimore College of Dental Surgery, then just established as the first dental educational institution in the world, and graduated in the first class from that college in the spring of 1841, his only classmate being the late Dr. Robert Arthur, of Baltimore. After receiving his diploma he removed to St. Louis, Mo., where he practiced his

profession for about three years. He then returned to Baltimore, where he entered the University of Maryland, and after pursuing the regular course of instruction, graduated from the medical department of that institution.

After receiving his medical degree he settled for a time in Sudley, Prince William county, Va., where he practiced medicine until the death of his first wife, who was a Miss Harriet Bennett, of Talbot county, Md. He then went to Savannah, Ga., and during the period of his early residence in that city was married to Miss Isabelle Hollingsworth, of Elkton, Md. He continued to practice medicine in Savannah for about three years. He then purchased a farm at Langley, Fairfax county, Va., where he was living at the outbreak of the Civil War. Being a strong sympathizer with the Southern side in the Rebellion, his property was confiscated by the Union soldiers and he was made a prisoner. Being a younger brother of General W. W. Mackall, of the Confederate army, and through the influence of General W. S. Hancock, he was paroled and then returned to his old home place, Wilna, near Charles Station on the Baltimore and Ohio Railroad, in Cecil county, Md.

In addition to his professional work as a medical practitioner in Elkton, his active interest in human affairs and his marked literary ability led Dr. Mackall into public life. He was for many years president of the Cecil County School Commissioners, and in 1888 was elected to the legislature of Maryland, the only elective position for which he was ever a candidate. He, in addition, had held several minor positions, and always took an active interest in democratic politics. He was for some time owner and editor of the *Cecil Democrat*, a prominent local paper, and was a frequent contributor to magazines and newspapers other than his own publication. He was a prominent member of the Episcopal Church, and served as a delegate to the Episcopal convention which divided the diocese of Maryland. He was also a delegate to several general conventions of the Protestant Episcopal Church, and was a delegate to every diocesan convention since the formation of the diocese of Easton.

The funeral services were held on Wednesday, February 19th, in the Trinity Protestant Episcopal church, conducted by the Rev. Wm. Scholer, followed by a eulogium by the Right Rev. Leighton Coleman, Bishop of Delaware. Interment was made in Elkton Presbyterian cemetery.

Dr. Mackall is survived by his only son, W. Hollingsworth Mackall, a prominent business man of Elkton.

---

### DR. RALPH S. HUNT.

DIED at Pittsfield, Mass., April 5, 1902, of pneumonia, RALPH S. HUNT, D.D.S.

Dr. Hunt was born at Orange, Mass., January 8, 1876. He graduated at the Pennsylvania College of Dental Surgery, March 30, 1899, and began the practice of dentistry June 1, 1901, in Pittsfield, Mass. He was married, June 2, 1897, to Miss Hattie M. Bates, Orange, Mass., who survives him.

Dr. Hunt was a member of the western division of the Massachusetts Dental Society. He was a young practitioner of much promise, and his death has caused deep sorrow among his friends, who mourn his untimely loss.

## REVIEW OF CURRENT DENTAL LITERATURE.

---

[*l'Odontologie*, Paris, March 15, 1902.]

### LARGE SALIVARY CALCULUS IN THE SUBMAXILLARY GLAND: DIAGNOSIS BY X RAYS. BY PROFESSOR GEROA, BUCHAREST.

The diagnosis of salivary calculi of large size is almost always an easy matter, because as a rule they occupy the ducts of the different salivary glands and when they acquire large proportions they are readily detected by the patient, but in this case the calculus was lodged in the substance of the gland and diagnosis of its presence was made possible only by the use of the Röntgen rays. The patient was operated upon, and a calculus weighing ninety grains and having a diameter of two centimeters and a half (about one inch) was removed.

[*Revue de Stomatologie*, Paris, February, 1902.]

### SOMNOFORM. BY DR. PITSCH.

The author has anesthetized forty patients with this anesthetic. The time required to bring about anesthesia varies from thirty to fifty seconds; the color of the face remains normal; the pulse is quick at first, but rapidly becomes regular; no excitement takes place except some contractions of the hands. The patient regains consciousness easily and without experiencing any malaise. The author expresses a favorable opinion of this agent, especially when contrasted with ethyl bromid.

[*Press medicale Belge*, Brussels, December, 1900.]

### ANESTHESIA WITH ETHYL BROMID. BY DR. HAFFTER.

Dr. Haffter has successfully employed ethyl bromid in more than two hundred patients; these favorable results can be obtained only with the pure drug. The purity of the drug can be ascertained in the following manner: Its evaporation must not leave a residue; when mixed with water and filtered it should not react with silver nitrate, and concentrated sulfuric acid should not impart to it even the slightest brown coloration.

[*La Odontología*, Madrid, December, 1901.]

### EPULIDS AND THEIR TREATMENT. BY DR. OSCAR AMOËDO, PARIS.

Dr. Amoëdo begins his elaborate communication by calling attention to the fact that dentists have greater opportunities of diagnosing the presence of epulis than surgeons, and that while the latter are called upon to treat these growths when they are already in full evolution the dentist can discover them at their beginning, and thus can apply the necessary means to check their growth and bring about their cure.

After a careful study of the pathological anatomy of these neoplasms and after an intelligent discussion of the etiology, symptomatology, course of the disease, prognosis, and treatment, the author presents the following conclusions:

Epulids in general are benign tumors from a clinical standpoint, no matter what their histological characteristics may happen to be.

The dentist, because of the frequent inspections of his patients' mouths which he is called upon to make, should diagnose them from the beginning, even if patients ignore their presence.



Chemical cauterization with chromic acid, thermal cauterization with the thermo-cautery or galvano-cautery, are methods which should be followed.

Removal of tartar, with buccal antiseptics, constitutes one of the bases of treatment.

In cases in which the disease extends itself so as to involve a considerable area the dentist should turn over his patient to the surgeon.

[*Odontologische Blätter*, Berlin, March 15, 1902.]

#### BLUE LIGHT AS AN ANESTHETIC. (DR. MININ'S METHOD.)

The interesting observations of the Russian physician Dr. Minin regarding the anesthetic effect of blue rays are here recorded. It appears that the reflection of blue light is rapidly followed by insensibility to pain, and that in this way Dr. Minin has found himself able to relieve his patients from the pain accompanying acute inflammation of the skin and mucous membrane. He uses a fifty-candle-power light and throws the blue rays upon the surface to be anesthetized for from ten to twenty minutes.

[*Zahntechnische Reform*, Berlin, January 5, 1902.]

#### FACIAL PROSTHESIS. BY DR. PH. ZUNDEL, KAISERSLAUTERN, BAVARIA.

Reference is made in this paper to the fact that in dental literature nothing definite can be found regarding methods of making facial artificial substitutes. The case reported by this writer is that of a young lady in whom the congenital absence of the left ear had to be supplied by a prosthetic appliance. An impression was first taken of the region that would be occupied by the artificial ear, and then one from the ear of another young lady; from this impression a model was poured, and this after some changes was made to resemble as much as possible the patient's natural ear. From this modified model a plaster die and a counter die were made, and upon these the artificial substitute was built. The material used was a solution of celluloid in acetone to which an appropriate quantity of suitable dry paint was added in order that the resulting color should match the shade of the skin. When the artificial substitute was ready the next step in the procedure consisted in devising a method of adjusting it to the skin. After giving a considerable amount of thought to this point he decided to adapt it by means of an adhesive fluid devised and patented by Dr. Henning, and composed of "colloctinum adhæsivum," mercuric sulfid, and zinc oxid. The author claims that by means of this adhesive preparation prosthetic pieces are beautifully adapted to the skin.

[*Deutsche Zahnärztliche Wochenschrift*, Berlin, November 23, 1901.]

#### POWDERED CHARCOAL AS A TREATMENT FOR HEMORRHAGE FOLLOWING TOOTH-EXTRACTION. BY DR. ARTHUR MASUR, BRESLAU, SILESIA.

Notwithstanding that hemorrhage following tooth-extraction is easily arrested, yet, says the author of this paper, there are some cases which require special attention. He discusses the means usually employed for arresting hemorrhage due to the extraction of teeth, states that stypticin and gelatin solutions do not always give satisfactory results, and advises the use of charcoal powder, which he has successfully employed for the last three years. His *modus operandi* is as follows: The alveolus, which is freely irrigated with pure water, is dusted with charcoal powder, and to "insure better adaptation of the charcoal to the bleeding capillaries it can be packed into the alveolus by means of cotton." There is also another and very easy way of

carrying the powder into the alveolus,—by means of a damp cotton tampon, which is made to take up the charcoal and is then introduced into the canal. The powder is allowed to remain two minutes in the alveolus, and is then washed out with a strong stream of water.

In cases in which it is desirable to leave a packing over night, the use of iodoform gauze impregnated with charcoal is recommended, although the essayist states that he has never had to recur to this procedure, as he has always been able to arrest hemorrhage in these cases with the simple application of charcoal powder.

The action of the charcoal powder is supposed to be a merely physical one, the closing up of the openings in the capillaries with the charcoal granules. Incidentally, it is also stated, the charcoal has the property of hastening the healing of the wound, and its union with the tissues of the wound is very intimate, as it takes a strong stream of water to dislodge it.

[*Lancet*, March 22, 1902.]

GENERAL INFECTIONS PRODUCED BY STAPHYLOCOCCUS AUREUS AND BY THE STREPTOCOCCUS. BY DR. GIUSEPPE BELLEI, BOLOGNA.

This paper is interesting in view of the fact that it supports the opinion that the effects of microbic invasion depend not so much on the virulence of the invaders as it does on the vital resistance of the invaded organ. Four cases are reported, and of these the first one is a good instance of general invasion and death due to a lack of resisting power rather than to an excessive virulence in the micro-organisms present. This case was that of a physician who infected himself after opening an abscess in the arm of a female servant, and who died two months afterward in consequence of the general infection which ensued in a short time. The servant recovered.

Another and also a very interesting feature of the paper is the record of cases of inflammation of the throat and pharynx followed by general infection and death, caused indirectly by chronic inflammation and suppuration of the alveoli. Reference is also made to the observations of Professor Murri, of the University of Bologna, with regard to the suppuration of neighboring lymphatic glands and general infection which follows throat inflammation in patients suffering from "chronic disease of the gums and maxillary alveoli, attended with the production of pus" (pyorrhea alveolaris). The explanation given for the disastrous effects which follow inflammation of the throat in persons suffering from pyorrhea is that "the saprophytic micro-organisms in the mouth become virulent when a chronic inflammation of the alveoli and gums is present, because in the purulent material thereby produced they find a very congenial soil, and they thus acquire a certain virulence. In the next place they enter the tissues at points where the local reaction is not sufficient to hinder their migration into the nearest lymphatic glands or into the blood, where they cause a general infection."

[*International Dental Journal*, Philadelphia, February, 1902.]

FACIAL AND DENTAL HARMONY. BY LAWRENCE W. BAKER, D.M.D., BOSTON, MASS.

This paper shows how to change the artificial appearance of a set of porcelain teeth by grinding off their edges. The beautiful results thus obtained are shown in a number of illustrations, which emphasize the fact that with some training and artistic taste it is possible to produce a set of teeth of natural appearance even from one in which the artificial features are strongly marked.

[*Journal of the British Dental Association*, March, 1902.]

CASE OF SUBMENTAL SINUS, A SEQUELA OF INFLUENZA,  
TREATED BY ROOT-FILLING. BY MR. W. J. MAY, L.D.S. ENG.,  
ETC.

The case described by Mr. May is that of a young lady aged twenty-two, in whom an abscess developed in the lower lip in the region of the incisive fossa about six weeks after an attack of influenza. "The teeth were not suspected as a cause of the trouble." The patient was operated upon, but in spite of all treatment the fistula persisted. The patient was then referred to Dr. G. P. Moore, a dentist of Dublin, and to Mr. May, who attributed the disturbance to two devitalized lower incisors. These were consequently treated by means of appropriate dressings, as was also the fistula, which was packed with iodoform gauze, and recovery easily took place.

ARTICULATION OF ARTIFICIAL DENTURES AND RETENTION OF THESE IN EDENTULOUS CASES. BY A. L. BOSTOCK, L.D.S. ENG.

The plan followed by the author consists in making plates as large as can possibly be worn. They are made to cover the maxillary tubercles. "This," he says, "I consider of the very utmost importance in edentulous cases; but the palatal portion is kept well in front of the soft palate." On the buccal surface he makes a well-defined depression, to avoid any pressure. On the labial side the plate is extended upward, but of course without interfering with the frenum or with the upper lip. He advises to slightly scrape the model around the maxillary tubercles, the incisive fossæ, and the hard palate just under the edges of the plate, to make sure that close contact, but not pressure, is obtained. For lower plates it is recommended to extend the plate downward on the labial surface as far as the lower lip will permit. In fact, the general idea involved in this description of plates is to extend them as much as possible without interfering with the frena or with the attachment of muscles, so as to allow ample space for the movement of muscles which otherwise displace the plates. With regard to vacuum chambers the following statement appears: "These I consider merely mechanical contrivances of no practical value whatever; yet they are still commonly both used and abused." Regarding the arrangement of the teeth, and in order to obtain the best results, the writer advises to keep the upper plate as light as possible by keeping the teeth shallow, thus giving the bulk of the height, and consequently weight, to the lower teeth. But, as he very wisely remarks, the upper front teeth will vary in length with each particular case. He calls attention to the faulty arrangement of the teeth witnessed in those plates in which the teeth are arranged with their occluding surfaces perfectly horizontal, and says that with the natural teeth the arrangement gives the surfaces of occlusion "a marked downward curve from front to back, being lowest between the first and second bicuspid."

Regarding the upper jaw he says that the crown and root of the second bicuspid is vertical, the teeth immediately anterior to it having their roots leaning slightly backward, whilst the molars, having their occluding surfaces directed slightly outward and distinctly backward, their roots point somewhat toward the bicuspid. This is most noticeable with the second and third molars, and worth bearing in mind when extracting these teeth. In the lower jaw the roots are pointed backward, this direction being strongly marked in the molars, their occluding surface being directed slightly inward and, as is the case also with the bicuspid, being arranged to correspond with the opposing surfaces of the upper teeth.



With regard to the front teeth, the author says that they should be arranged in such a way that the tip of the upper canine should reach the posterior edge of the lower canine, and the tips of the lower incisors should barely meet the lingual surfaces of the upper incisors.

A description of the articulation of bicuspid and molars is also given. The teeth should be arranged in such a manner that a line drawn from the biting edge of the central incisor to the posterior buccal cusp of the second molar should demonstrate the downward curve or depression in the occluding surfaces of the teeth, of which mention has already been made. In the lower denture a line drawn from the posterior buccal cusp of the second molar, and carried forward on a level with the tip of the first bicuspid, should show the anterior teeth well above, and the second bicuspid and first molar below this line. It is by following this arrangement and obtaining the aforesaid curves that stability will be given to the plate.

The next paragraph seems to us to be of vital importance, and we quote it in full: "It is in the bicuspid region that the act of mastication is first commenced, and it is here where pressure applied should not displace the dentures, and if patients cannot obtain any cutting action from the bicuspid, the incisors are used to do this extra work, with the result that the dentures are displaced by the bringing of the incisors edge to edge for this purpose."

The use of flat teeth at the back of the mouth is condemned as giving practically no masticating surface. The question of accurately fitting dentures in mouths in which the lower jaw is wider than the upper, as well as the arrangement of the teeth, is also taken up. The author concludes his paper by discussing the arrangement of the teeth in parabolic curves proportionate to the varying size of different jaws.

[*Dental Review*, March 15, 1902.]

#### INFLUENCE OF SEXUALITY IN THE DEVELOPMENT OF THE TEETH. BY T. ELHANAN POWELL, D.D.S., CHICAGO, ILL.

• After a lengthy exposition of arguments in support of the opinion embodied in the title of his paper, the essayist concludes with the following remarks:

"Why the sexual nature influences the development of the teeth is a problem which has never as yet been answered. No one has been able to explain why a stag never renews his horns after castration, but it is evidenced by many naturalists that he does not. The stag of the reindeer seems to be an exception, it being claimed that the horns of the reindeer are not sexually affected. There must be a close relationship through the sympathetic nerves. I have heard that irritation of the clitoris affects the incisors and cuspids of the lower jaw."

#### PORCELAIN INLAYS. BY HUGO FRANZ, D.D.S., CHICAGO, ILL.

Reference is made in this paper to the pain incident to the filling with gold of cervical cavities of the labial and buccal surfaces of the ten anterior teeth, and to the comparative ease to patient and operator with which porcelain inlays can be inserted. The author points out the cavities especially suitable for inlay work, and calls attention to the fact that in extremely nervous patients porcelain work is particularly called for, as the necessity of making undercuts, a painful procedure to which nervous patients do not readily submit, is completely avoided. He also points to some differences in the fusing of low-fusing and high-fusing porcelain and also to the shrinkage in cooling. He attributes to *faulty handling* of the matrix and not to warping of the porcelain the failures of inlays attributed chiefly to this latter cause.

STIGMATA OF DEGENERACY IN RELATION TO IRREGULARITIES OF THE TEETH. BY EUGENE S. TALBOT, D.D.S., CHICAGO, ILL.

After defining degeneracy and contrasting it with the opposite process of elaboration, the author defines the stigmata of degeneracy as "expressions of hereditary defect indicating the direction of the disturbance of organic balance produced by the control of the central nervous system over the local nervous system governing growth and repair." The stigmata or evidences of degeneracy are represented by some deformity of the human body. With reference to the teeth the writer makes the following statements: "It may seem that irregularities of the teeth are very simple, that cause and effect are very simple, but biologic views of these deformities are different." "The jaw is degenerating for the benefit of the brain. As the race becomes more intelligent, the jaw is not required to do so much labor. As man does not need to tear or grind his food, as do animals, his jaw does not require so much nutriment, and consequently does not develop so large proportionately, but is constantly diminishing."

LESIONS OF THE MOUTH. BY F. R. WRIGHT, MINNEAPOLIS, MINN.

The writer divides lesions of the mouth into three groups:

- (1) Simple and inflammatory conditions (non-contagious).
- (2) A simple and inflammatory condition which resembles an infectious disease, and a lesion of an infectious disease which simulates or resembles a simple condition. This group comprises the aphthous ulcer and the mucous patch. Of this oral manifestation of syphilis a very clear and intelligent description is given. The points of difference between the aphthous ulcer and the mucous syphilitic patch are given as follows: The aphthous patch has a creamy or yellowish white color, the mucous patch a purely white or a dull red glazed. The aphthous patch is surrounded by a bright red inflammatory area, while the mucous patch may be sharply outlined against the normal mucous membrane, or, if surrounded by a reddened area, it is a dull red of specific inflammation and not a bright inflammatory red. A close examination, moreover, of the aphthous patch shows that it has lost its epithelial covering, that it is a true ulcer, and that it owes its color to a broken tissue adherent to its surface. Similar close examination of the mucous patch shows that it has retained its epithelial covering; that it has changed in color is due to an alteration in the epithelial cells and not to the loss of them. If the epithelial covering in a mucous patch be lost, we find a smooth, dull red, glazed surface instead of the yellowish white, velvety surface of the aphthous patch. The aphthous patch is usually seen in the mouth that is otherwise healthy; the mucous patch is seen in the mouth which shows a specific pharyngitis.
- (3) New-growths which resemble infectious diseases, and the infectious conditions which they resemble. In this group the author includes the carcinomata or epithelial tumors, and states that the conditions which resemble them are the primary and tertiary syphilitic manifestations. The carcinomata, he says, occur very frequently about the mouth, comprising about twelve per cent. of all cancerous growths. They occur most often on the lips, tongue, and tonsils, but may occur at any point in the mouth. "The condition which most nearly resembles epithelioma is the primary lesion of syphilis, particularly when the infection has taken place on the lip." After differentiating between epithelioma and gumma, reference is made to the so-called perforating gumma, a syphilitic lesion of especial interest to the dentist, "inasmuch as he is often called on to restore, or

to construct some appliance to close the opening made in the roof of the mouth by it."

[*Pacific Dental Gazette*, San Francisco, March, 1902.]

COMPARATIVE VALUE OF COCAIN AND EUCAIN (REPORT OF COMMITTEE, S. C. D. A., READ BY DR. J. A. CRONKHITE, LOS ANGELES, CAL.)

"Eucain, when applied locally, produces some hyperemia of the mucous membrane rather than anemia. It has a marked advantage over cocain in being less poisonous, although their dosages are similar. The general action of eucain produces a marked excitation of the entire central nervous system, and in lethal doses convulsions affecting all the muscles, general paralysis, and death by a failure of respiration." . . . The lethal effect of cocain is paralysis of the heart, while with eucain death is caused by failure of respiration, the heart continuing to beat for some time after respiration has ceased. Besides the foregoing data regarding these two drugs the following differences are also given: Solutions of cocain are not stable; those of eucain are, and can be sterilized by boiling. Eucain has no effect upon the pupil, but cocain causes dilatation.

[*Amer. Journ. of the Med. Sciences*, Philadelphia, April, 1902.]

A CASE OF STOMATITIS GANGRÆNOSA (NOMA). BY DR. LOUIS FISHER, NEW YORK.

After giving a careful description of this very fatal disorder the essayist reports the following case from his practice:

"Elise G., aged seven years, was seen by me in January, 1900. The child had complained of severe headache for three or four days, and was very feverish. Her mother became alarmed because of persistent vomiting. She stated that the child vomited at least six times in twenty-four hours. She complained of feeling fatigued and had pains in her arms and legs. Small doses of quinin were given, but did not seem to relieve the condition present.

After giving the history of his patient, mentioning the diseases from which she had suffered, especially a severe attack of measles and one of whooping-cough, he continues his report as follows:

"When the child was undressed an eruption was found all over the body which was that of typical scarlet fever. The throat was filled with evidences of pseudo-membranous patches which were distinctly scarlatinal in character. The temperature was 103.4° F., taken in the rectum; pulse, 128; respiration, 22. The child was put to bed and an expectant plan of treatment ordered, in addition to a very light liquid diet consisting of soup, milk, buttermilk, broth; nothing else was allowed. No solids were given. For the thirst I ordered orange-juice and apple-sauce. Small doses (wine-glasses) of citrate of magnesia were given for their laxative and diuretic effects.

"Desquamation followed in the second week in the usual manner. The urine showed traces of albumin in the second week, which increased until that time,—six pro mille, according to Eschbach's albuminometer; hyaline and epithelial casts were found in great numbers. There were also large quantities of blood-corpuscles visible under the microscope. The urine was quite red from the blood that it contained. At the end of the third week there was quite an anuria. This latter condition was relieved by the application of several dry-cups over the region of the kidneys. Five to ten grains of diuretin internally were ordered every four hours. Citrate of potash was given, five-grain doses combined with large quantities of apollinaris and lithia water. After three weeks of patient treatment the child recovered.

"The heart sounds were not only very feeble, but thready, and a loud, blowing, hemic murmur was audible, which was attributed to the anemic con-



dition. Iron was given in the form of the syrup of iodid of iron; hypophosphites were also administered as restoratives. Convalescence lasted in all until April, a period of almost three months from the time of the child's first illness. About this time she complained of pain in the gums and on the cheek while chewing. Later the foul breath attracted attention. At first this condition was attributed to the teeth, but a dentist who saw the case found the teeth and gums healthy. The ulceration, which had now become quite marked, from the size of a silver dollar, spread with remarkable rapidity. Its color was that of a dirty blackish-gray, and had purpuric spots scattered around the edges of this ulceration, resembling subcutaneous hemorrhages. On examining it, considerable fluid, which was very foul-smelling, exuded on pressure. Antiseptic lotion, consisting of 50 per cent. hydrogen dioxid diluted with water, was ordered as a mouth-wash. The child was told to rinse the mouth every half-hour, especially after eating. The gangrene extended to the outside of the cheek, involving almost the whole cheek. The child had its mouth and its cheek thoroughly cauterized by using the Paquelin cautery. Ichthyol was applied in the following manner: R—Ichthyol et lanolin, M. ft. ungt. S.—Apply over the whole of the gangrenous surface by rubbing the parts thoroughly, the same to be repeated at least three or four times a day. The ichthyol seemed to serve remarkably well in this case. The same application was continued for about three weeks, when the child was discharged as cured."

---

## PERISCOPE.

---

**To Keep Hydrogen Dioxid.**—Tightly cork the bottle and keep it standing inverted in a vessel of water.—*Dominion Dental Journal*.

**Precocious Tooth-Eruption.**—Dr. P. Pandatyis reports (*Progrès Dentaire*) the eruption of three incisors, two upper and one lower, in an infant eight days old.

**Pulp-Devitalization in Deciduous Teeth.**—One or two applications of aqua ammoniæ is sufficient in most cases to devitalize an exposed deciduous pulp. Apply on a pledget of cotton in the cavity.—*Ohio Dental Journal*.

**Toothache Drops.**—The *Oesterreichische's Zeitschrift für Pharmacie* publishes the following formula for the treatment of odontalgia: Oil of cloves, oil of cajuput, of each 10 parts; chloroform, acetic ether, of each 5 parts; menthol, 3 parts; camphor, 1 part.

**Chemical Test for Sodium Dioxid.**—Place about 1 gm. of sodium dioxid in a clean, dry test-tube and add one or two c.c. of water. If the chemical is efficient enough, oxygen will be generated sufficient to inflame a glowing splinter held at the mouth of the tube.—J. P. BUCKLEY, in *Dental Review*.

**Baby Ribbon for Contouring Amalgam Fillings.**—Have on hand three or four widths of baby ribbon with smooth edges. Cut off strips of suitable size, pass between the teeth, and use to contour the amalgam before it sets. It is strong and thin and will readily adapt itself to the contour of the tooth.—*Dental Brief*.

**Breslau Dental Institute.**—The inauguration of the Dental Institute of the University of Breslau took place December 4, 1901. The surgical clinic is composed of two large rooms fitted up with all modern appliances. Two rooms are especially devoted to operative dentistry and three to prosthetic dentistry.—*l'Odontologie*.

**Tin Filling Sixty Years Old.**—"In the *Periscope*, DENTAL COSMOS for April, 1902, page 415, mention is made of a gold filling fifty-seven years old. On page 8 of 'Ambler's Tin Foil and its Combinations for Filling Teeth,' an authenticated record is made of a *tin* filling sixty years old."—H. L. AMBLER.

**Proper Temperature at which to Pour Zinc.**—Take a piece of dry, white pine wood and thrust it into the molten zinc for about four or five seconds. If it is badly charred, or fires, the metal is too hot. If only charred slightly, say a coffee-brown color, it will be about the right heat to pour. The cooler you can pour the zinc the better it will flow,—that is, after the zinc is fluid.—THEO. F. CHUPEIN, in *Dental Office and Laboratory*.

**Intra-rhachidian Anesthesia.**—Hendrix (*Journ. de Chir. et Ann. de la Soc. Belge de Chir.*) says that Bier, discoverer of this method of anesthesia, has stated that he considers it more dangerous than chloroform, disapproving of the enthusiasm with which it has been received, and that it should never be employed without full knowledge of those modifications which have been found to be indispensable.—*Amer. Journ. of the Med. Sciences*.

**"Tin-Gold" an Excellent Material for Filling Teeth.**—When tin is used in alternate layers with gold, which here will be called "tin-gold," the whole mass very soon welds together and becomes "as hard as amalgam and more durable." The margins never become defective, but always maintain marginal integrity, as amalgams do in the advertisements. Tin-gold does not become so black as tin alone, but a sort of gray color.—J. R. CLAYTON, in *Dental Brief*.

#### **Treatment for Burns.**—

R—Cocainæ hydrochloratis. gr. xv;  
Aristol., ʒj;  
Olei olivæ, ʒv;  
Lanolinæ, ʒxv. M.

Sig.—Apply upon burned surface.

**Calcium Peroxid as a Disinfectant for Carious Teeth.**—In a series of experiments with calcium peroxid as a disinfectant for the mouth, it was found that carious teeth kept in a solution of calcium peroxid in distilled water lost their germs in a short time. A tooth-powder containing calcium peroxid (about 10 per cent.) proved efficient in destroying all germs in carious teeth in thirty minutes of contact.—SOPHIE HORNSTEIN (*Roussky Archiv. Patol.*).

**Preservative Action of Tin.**—Tin oxidizes, forming stannous oxid, a compound which is insoluble in the fluids of the mouth. The stannous oxid is formed on the entire surface of the tin, within the cavity as well as without, blocks up the tubuli, and bars the further progress of micro-organisms. It oxidizes more rapidly in contact with gold, does not blacken the tooth in the least, and can be so placed as not to be seen except upon critical examination.—J. R. CLAYTON, in *Dental Brief*.

**Protection for Engine Handpieces.**—To prevent saliva and other fluids getting into the handpiece of the dental engine while preparing teeth either for crowns or for fillings, but especially in the former case, where the use of corundum stones necessitates frequent dipping into water, I invert one of the rubber cups on the shank of the instrument, the open side thus being toward the handpiece. This absolutely prevents moisture or débris from finding its way into the handpiece.—J. MASTERS, in *Items of Interest*.

**For Foetid Breath.—**

R—Thymol., gr. viij;  
 Spit. vini rect., f̄ij;  
 Glycerinæ, f̄ss;  
 Formol., gtt. viij;  
 Aquæ ad q. s. ℥viij.      M.

Sig.—Use as mouth-wash, especially when fœtor is due to decaying teeth.

**Deterioration in Molten Zinc Obviated.**—Zinc, as is well known, becomes sluggish and thick after several meltings, a condition caused by the absorption of oxygen from the atmosphere and of impurities from the melting-pots. To improve it, the following procedure is recommended (*Dental Office and Laboratory*): "The addition of 0.001 of aluminum will render the zinc very fluid. This process is patented, the patents belonging to the Delaware Metal Refinery Co., who sell an alloy composed of zinc and aluminum, to add to the molten zinc just previous to pouring."

**Papain.**—Papain is an alkaloid obtained from the pawpaw (*Carica papaya*), a perfect digester. I have been for some years experimenting with papain [see DENTAL COSMOS, vol. xlii, p. 1273], and I am at this time able to tell you that all methods of digesting a pulp, when compared with this, fall into comparative insignificance. If you will take 1 grain of papain, a drop of glycerin, and a drop of a 1:200 solution of hydrochloric acid, and mix them together into a paste, apply this to a dead pulp and seal it in for two weeks, you will find that the pulp has been digested.—H. W. HARLAN, in *Dental Review*.

**Facial and Oral Deformities in Early Life.**—It is surprising how a little habit, daily indulged in, will deform the features of the face in early life, when the cartilaginous and bony framework are soft and pliable. Pulling the lobes of the ears, the lower lip, the eyebrows,—each habit has its nemesis in some unnatural result. I once had under my daily observation a lad who had caused a considerable protrusion as well as torsion of the left central and lateral incisors from the inveterate habit of biting the left thumb-nail, and I am convinced that many cases of irregularities of these teeth are due to just such simple but undetected causes.—W. GEORGE BEERS, in *Dental Hints*.

**Cancrum Oris in an Asylum.**—In the *American Journal of the Medical Sciences*, Blumer and MacFarland report an epidemic of sixteen cases of cancrum oris [noma] in the Albany Orphan Asylum. This terrible disease appeared after an epidemic of measles. It began with a slight ulceration of the mucous membrane, which quickly became dark, broke down, and had an offensive odor. The process in some cases was very rapid. The patients did not suffer any pain, even when the ulcerations were washed and dressed. The treatment consisted in the use of antiseptic dressings and in cauterization under chloroform.

**A Vulcanized Rubber Ear.**—Mr. James Erskine reports (*British Medical Journal*) the case of a young boy in whom the partial absence of the external ear had been successfully replaced by an artificial substitute made of vulcanized Vela rubber. The appliance was made by Mr. D. R. Cameron, L.D.S., in the following way: A plaster cast was first made of the left or normal ear, and also of the remains of the right auricle. An artificial right ear was then modeled in wax, conforming to the left as far as possible, and finally of vulcanized Vela rubber. The artificial auricle is kept in position mainly by a process which fits into the external meatus. It is perforated for the admission of air.



**Diagnosing Caries.**—The microscope has revealed the importance of operating at a very early stage of caries, yet a microscopic examination is not necessary to tell us if caries is in progress. Separate the teeth sufficiently to admit a thin, fine polishing disk. With this disk remove the stained spot that is nearly always to be found where the teeth actually touch each other. If an opaque white spot remains when the stain has been removed, the processes of decay have started.—J. LEON WILLIAMS.

**What Kind of Light is Most Injurious to the Eyes?**—A Russian physician has made experiments to ascertain the kind of light that is most injurious to the eyes. He has based his researches upon the well-known fact that the more tired the eyes are, the more frequently they will close. Placing a person before the light of a candle he found that the eyes closed at an average of  $6\frac{1}{2}$  times per minute; placing the same person before a gaslight he found that the closing of the eyelids averaged  $2\frac{1}{2}$  times per minute. Then, using sunlight and electricity, he found that under the influence of the electric light the eyes closed the least number of times. He concludes that electric light is the least and candle-light the most injurious to the eyes.

**A "Good Fit" in Inlays.**—Discussing the question of porcelain inlays, Dr. E. M. S. Fernandez (*Dental Review*) makes the following statement: In regard to a perfect fit, there is a great difference of opinion as to what is meant by a good fit. I claim that the dentist who will make a perfect fit to a cavity will make a worthless inlay, for the reason that we have not the proper cement for that purpose to-day. That is what we need mostly for this work,—a cement which will be insoluble in the acids of the mouth, transparent or almost colorless, non-irritant, and very thin in consistence. The cement we have at present occupies considerable space. Therefore the size of the matrix must include the space which is to be occupied by the cement.

**Devitalization of Pulps Refractory to Arsenic.**—If, after two or three applications of minute quantities of arsenic it be found that the pulp is only partially devitalized and responds painfully to any attempt at extirpation, do not make any further application, as it is clear that the pulp is refractory to the action of arsenic. Remove the necrosed portion of the pulp and introduce into the canal a sedative dressing, and repeat the application at intervals of twenty-four hours. It will be found that in the majority of cases, after four applications at the utmost, the entire pulp will be completely devitalized. In cases of this nature the sedative agent reduces the degree of inflammation of the pulp, which is then in a condition to absorb the arsenic which remained in the canal.

**Infantile Scorbutus.**—The treatment of this constitutional disease consists of regulation of the diet and the administration of orange- or lemon-juice. Either method alone is useful, but the combination is far preferable. The diet should be that suitable for the infant of the given age,—breast-milk, modified cow's milk, and beef-juice. Modified milk should, unless contraindicated by complicating conditions, be given uncooked. The juice of half or the whole of a lemon or orange should be given daily. No drug is of the slightest use. During convalescence iron may be indicated for the anemia. Complicating gastro-enteric disturbance should be treated symptomatically, if necessary. The tenderness of the back and limbs demands that the infant be kept quiet. In the severer cases recumbency on a Bradford frame or light splints to the affected limbs will afford much relief for the first few days; they are rarely needed for a longer time.—MORSE, in *New York Med. Journal*.

### **An Early Recognition of the Value of Manual Training in Dentistry.**

—That manual training was considered in the early years of modern dentistry as a factor in the education of the dentist can be seen in the following quotation from Dr. Amos Westcott in the *American Journal of Dental Science* for December, 1846: "The supposition that theory alone will qualify students as practitioners of dental surgery is as absurd as to suppose that Sivori or Ole Bull had attained their almost superhuman skill upon the violin by merely listening to the enchanting strains of the immortal Paganini. To acquire that dexterity of hand necessary to perform the nice and delicate operations upon the teeth, just as in the execution of music, the hand must be educated, or failure is inevitable."

**Influence of Alcohol upon the Natural Resistance.**—Goldberg (*Centralblatt für Bacteriologie und Parasitenkunde*) states that as the result of an interesting series of experiments made in the laboratory of Professor Chistovich, the author arrives at the following conclusions: 1. Doves, which are naturally immune against anthrax, become subject to infection after moderate doses (2 to 3 c.c.) of 40 per cent. brandy, which produces only transient alcoholic intoxication, but does not result in the death of the animal. 2. Chronic alcoholic intoxication diminishes the natural resistance of doves to anthrax. 3. Small doses of alcohol repeatedly given to doves infected with fatal doses of a culture of anthrax do not save the bird, and only exceptionally prolong their lives in comparison with control doves; sometimes they cause apparently earlier death of the bird.—*Amer. Journ. of the Med. Sciences.*

**Saliva a Natural Protection against Dental Caries.**—The established opinion that the conversion of starch into sugar and the lubrication of the food bolus are the most important functions of saliva is not shared by Dr. A. Michel (*Deutsche Monatsschrift für Zahnheilkunde*), who believes that these are only incidental functions, and that its true function is to protect the teeth by neutralizing, by means of its alkaline constituents, the acids which may be present in the mouth, and also by means of its bactericidal properties to prevent the development of bacteria. He says that notwithstanding that in the carnivora saccharification is unnecessary, saliva is present in their mouths, and further, that in animals which are fed on starchy products the pancreatic secretion suffices very well for the performance of that part of digestion generally attributed to saliva; also that in this variety of animals the quantity of salivary secretion is not in proportion with the work it would have to perform in case it were to take a part in the process of digestion. After taking into consideration the above statements and his many experiments upon this question, Dr. Michel states positively that saliva of normal composition when in sufficient quantity prevents the development of dental caries.

He quotes the works of Röse, Eloff Förberg, and Kiehlhauser on the lack of calcium salts in the hard tissues of the teeth of individuals living in regions poor in this kind of compounds, and says that the prevalence of caries in such regions is not due to the lack of calcium salts in the hard tissues of the teeth, but in the saliva, and as a consequence the inability of this fluid to neutralize the acids which may be present upon the teeth. After many tests he has found that the saliva of individuals living in Wurzburg (a region that is rich in calcium salts) contains double the amount of calcium salts found in the saliva of individuals living in Sohrer (a locality that is poor in calcium salts).

As nervous irritation has a great influence upon the composition of saliva, the result follows that nervous persons suffer more from dental caries than perfectly healthy ones. Michel believes that the cyanogen and potassium sulfo-cyanid found in the saliva are the antibacterial agents. After continuing his researches in this direction he has found that in smokers, among whom caries is rare, the amount of cyanogen secreted is increased.

**Selection of Anesthetics for Children.**—The general idea that chloroform is the safest anesthetic in childhood is refuted by T. H. Halsted in the *Philadelphia Medical Journal*. He regards it as more dangerous than at any other period of life, and quotes Wyeth, who uses chloroform almost always in adults, but ether invariably with children. Chloroform is especially to be avoided when there is any glandular enlargement, for Kolisko has pointed out that in cases of death during anesthesia in which heart and kidney lesions were not found, there was invariably found a condition of "habitus lymphaticus." This condition is often noted in children, in whom aberration of the lymphatic system is common.—*Chicago Clinic*.

**Drug-Eaters.**—It would apparently require a rather large catalogue to enumerate the various nauseous drugs and compounds which some samples of humanity find necessary for their comfort. It has been said that nearly everybody has some unbalanced streak, and this is certainly illustrated in the abnormal craving often manifested for drugs. One of the latest accessions to this choice *menu* of harmful drugs is camphor. The *Indian Medical Record* reports that there are a large number of camphor-eaters among the well-to-do classes. Like various other abnormal habits, "camphor-eating" is excused on the plea of some immediate human necessity. It is said to produce a peculiar creamy whiteness of the skin.—*Monthly Cyclopedia*.

---

## DENTAL SOCIETY ANNOUNCEMENTS.

---

### COMING DENTAL MEETINGS—MAY AND JUNE, 1902.

#### MAY.

ALABAMA BOARD OF DENTAL EXAMINERS. Tuscaloosa. May 14th.

ARKANSAS STATE DENTAL SOCIETY. Little Rock. Two days: May 13th and 14th. State Board of Examiners meets same time.

CONNECTICUT STATE DENTAL ASSOCIATION. Hartford. Two days: May 20th and 21st. State Board of Dental Examiners meets same place, May 28th, 29th, and 30th.

FLORIDA STATE DENTAL SOCIETY. Daytona Beach, Daytona. Three days: May 28th, 29th, and 30th.

ILLINOIS STATE DENTAL SOCIETY. Springfield. Three days: May 13th, 14th, and 15th.

IOWA STATE DENTAL SOCIETY. Des Moines. Four days: May 6th, 7th, 8th, and 9th.

KANSAS STATE DENTAL ASSOCIATION. Hutchinson. Three days: May 8th, 9th, and 10th.

LOUISIANA STATE DENTAL SOCIETY. New Orleans. May 6th.

MISSISSIPPI STATE DENTAL ASSOCIATION. Biloxi. Three days: May 20th, 21st, and 22d.

MISSISSIPPI BOARD OF EXAMINERS. Jackson. May 27th.

MISSOURI STATE DENTAL ASSOCIATION. Jefferson City. Three days: May 21st, 22d, and 23d.

NEBRASKA STATE DENTAL ASSOCIATION. Lincoln. Three days: May 20th, 21st, and 22d.

NEW YORK (SIXTH DISTRICT) DENTAL SOCIETY. Binghamton. Two days: May 8th and 9th.

NEW YORK STATE DENTAL SOCIETY. Albany. Two days: May 14th and 15th. State Board of Dental Examiners meets same time.



SOUTH CAROLINA STATE DENTAL ASSOCIATION. Charleston. May 13th.  
 SUSQUEHANNA DENTAL SOCIETY OF PENNSYLVANIA. Wilkes-Barre.  
 Three days: May 14th, 15th, and 16th.

SOUTHERN WISCONSIN DENTAL ASSOCIATION. Madison. Three days:  
 May 14th, 15th, and 16th.

TEXAS STATE DENTAL ASSOCIATION. Waco. Three days: May 13th, 14th,  
 and 15th.

WASHINGTON STATE DENTAL ASSOCIATION. Tacoma. Three days: May  
 22d, 23d, and 24th.

### JUNE.

CALIFORNIA STATE DENTAL ASSOCIATION. San Francisco. June 10th.

COLORADO STATE DENTAL ASSOCIATION. Colorado Springs. Three days:  
 June 17th, 18th, and 19th.

GEORGIA STATE DENTAL SOCIETY. Macon. June 10th. State Board of  
 Dental Examiners meets same time.

INDIANA STATE DENTAL ASSOCIATION. Lake Maxinkuckee. Three days:  
 June 24th, 25th, and 26th.

MARYLAND STATE DENTAL ASSOCIATION—JOINT MEETING WITH DISTRICT OF  
 COLUMBIA. Washington, D. C. Two days: June 6th and 7th.

MASSACHUSETTS DENTAL SOCIETY. Boston. Two days: June 4th and 5th.

MICHIGAN DENTAL ASSOCIATION. Grand Rapids. Three days: June 9th,  
 10th, and 11th.

MINNESOTA STATE BOARD OF EXAMINERS. Minneapolis. June 10th-14th.

NORTH CAROLINA DENTAL SOCIETY. Raleigh. Three days: June 19th, 20th,  
 and 21st. State Board of Dental Examiners meets same place June 16th.

## NATIONAL DENTAL ASSOCIATION.

### CHANGE OF DATE OF MEETING.

IN accordance with the result of the recent postal card vote, the date of  
 the coming meeting of the National Dental Association will be changed  
 from the first Tuesday of August to Monday, July 28th, and will continue  
 four days.

A. H. PECK, *Rec. Sec'y.*

## HARVARD DENTAL ALUMNI ASSOCIATION.

THE place of meeting of the Harvard Dental Alumni Association for the  
 thirty-first annual banquet, Monday evening, June 23, 1902, has been changed  
 from Young's Hotel, Boston, to the Harvard Union, Cambridge, Mass.

WALDO E. BOARDMAN, *Sec'y.*

## AMERICAN MEDICAL ASSOCIATION—SECTION ON STOMATOLOGY.

THE following is the program of the Section on Stomatology at the Ameri-  
 can Medical Association meeting to be held at Saratoga Springs, N. Y.,  
 June 10-13, 1902:

1. Chairman's Address: Dr. A. H. Peck, Chicago, Ill.
2. "Embryology of the Dental Pulp," R. R. Andrews, Cambridge, Mass.
3. "Histology of the Pulp," Vida A. Latham, Chicago, Ill.
4. "Notes on the Preparation of Teeth for the Microscope," Martha Anderson, Moline, Ill.
5. "Evolution of the Pulp," Eugene S. Talbot, Chicago, Ill.
6. "A Comparative Study of the At-

tachment of Teeth," Frederick Noyes, Chicago, Ill. 7. "Permanent Benefit from Correction of Irregularities of the Teeth due to Interstitial Gingivitis," M. H. Fletcher, Cincinnati, Ohio. 8. "Observations on Some Recent Cases of Orthodontia, with Illustrations," E. A. Bogue, New York City, N. Y. 9. "General Nervous Manifestations in Relation to the Jaws and Teeth," G. V. I. Brown, Milwaukee, Wis. 10. "Electric Ozonation in Neuralgia," G. Lenox Curtis, New York City. 11. "Diagnosis," Jonathan Taft, Cincinnati, Ohio. 12. "The Modern Dentist from a Medical Standpoint," Wm. Knight, Cincinnati, Ohio. 13. "Chancre of the Lip," G. T. Carpenter, Chicago, Ill. 14. "Oral Hygiene," G. F. Eames, Boston, Mass. 15. "The Legal Status of the Term 'Reputable' as applied to Dental Colleges," Chas. Chittenden, Madison, Wis. 16. "Auto-infection of the Mouth," G. L. Parmele, Hartford, Conn. 17. "Dento-facial Orthopedia," W. E. Walker, New Orleans, La.

Dentists desiring to become members of the Section can do so by obtaining credentials from their state or local dental society, and presenting them, with the sum of five dollars, to the treasurer of the association. This sum includes the *Journal* of the association for one year. All dentists are invited to attend and take part in the discussions.

A. H. PECK, *Chairman*,  
EUGENE S. TALBOT, *Sec'y*.

---

### ARKANSAS STATE DENTAL SOCIETY.

THE Arkansas State Dental Society will hold its third annual meeting at Little Rock on Tuesday and Wednesday, May 13 and 14, 1902.

A large attendance is expected and an exceptionally interesting program is promised. Several prominent men from outside the state will be in attendance and take part.

All members of the profession are cordially invited to attend.

ED. L. WATSON, *Sec'y*.

---

### NEW YORK STATE DENTAL SOCIETY.

THE thirty-fourth annual meeting of the New York State Dental Society will be held at the Hotel Ten Eyck, Albany, N. Y., Wednesday and Thursday, May 14 and 15, 1902, beginning promptly at 10 A.M. Wednesday. The following program will be presented:

President's address: John I. Hart, D.D.S., New York.

Correspondent's report: H. D. Hatch, D.D.S., New York.

Report of Committee on Practice: A. R. Cooke, D.D.S., Syracuse, N. Y.

Essays: "Root-fillings and their Relative Value," Leo Greenbaum, Philadelphia, Pa. "The Practical Side of It," S. S. Stowell, Pittsfield, Mass. "Comparative Value of Ordinary Sealings for Root-dressings as Excluders of Bacteria," A. E. Webster, Toronto, Ont. "Cements" (with report of committee), W. V-B. Ames, Chicago, Ill. "Extension for Prevention," R. H. Hofheinz, Rochester, N. Y. "Porcelain Crown- and Bridge-work from the Hygienic Point of View," J. Head, Philadelphia, Pa.

Headquarters Hotel Ten Eyck, where special rates, \$3.50 per day, have been secured. Special railroad rates on the certificate plan have been arranged with all trunk lines for one fare and a third for the round trip. Get

your certificate when you purchase your ticket. Members of the profession are cordially invited.

JOHN I. HART, *Pres.*, New York.

W. A. WHITE, *Sec'y*, Phelps, N. Y.

## KANSAS STATE DENTAL ASSOCIATION.

### CHANGE OF DATE OF MEETING.

It has been found necessary to change the date of meeting of the Kansas State Dental Association to May 8, 9, and 10, 1902 (instead of May 7, 8, and 9, as previously announced).

J. W. O'BRYON, *Sec'y*.

## MARYLAND STATE DENTAL ASSOCIATION AND DISTRICT OF COLUMBIA DENTAL SOCIETY.

THE sixth annual union convention of the Maryland State Dental Association and the District of Columbia Dental Society will be held in Washington, D. C., June 6 and 7, 1902.

M. F. FINLEY, *Ch'man Publ. Com.*

## NEW JERSEY STATE DENTAL SOCIETY.

### COMMITTEE ON ART AND INVENTION.

To all those who during the past year have invented or designed any instrument, appliance, method or operation in or applicable to the art and science of dental surgery:

The New Jersey State Dental Society respectfully solicits you to send a contribution of the article or appliance that you have invented or designed, with full description of the same. All appliances will be classified and receive due consideration at the hands of the society. We only stipulate that all articles sent shall be of practical value and of general interest to the profession at large. We shall make an interesting exhibit under the head of Art and Invention; one that will be of value not only to the profession but also to the inventors and designers. A full report will be made and printed in the society proceedings.

Send contributions by June 24th and not later than July 1st, otherwise they may not receive proper classification.

All appliances will be well taken care of and returned to the contributors after the session of the society, which will be held in the Auditorium at Asbury Park, New Jersey, July 16, 17, and 18, 1902.

This year's session will be one of the largest gatherings both in interest and attendance,—probably larger than any previous one of the New Jersey State Dental Society, which is known for its interesting, valuable, and well-attended meetings.

W. G. CHASE, *Chairman*,

1018 Witherspoon Bldg., Philadelphia, Pa.

## MISSOURI STATE DENTAL ASSOCIATION.

THE thirty-eighth annual session of the Missouri State Dental Association will convene at Jefferson City, Mo., May 21, 22, and 23, 1902. At 9 A.M. of



the first day routine business will be transacted at Legislative Hall, until adjournment, at 10 A.M., to State Penitentiary, where the first day's clinic will be held.

Heretofore the first day has been wasted; to prevent this, members are urged to be present at the opening session, as the unusually large program necessitates improving every moment of our time.

Note the following additions to the program as already published in the DENTAL COSMOS for April:

The address of welcome will be delivered by the Governor of Missouri, Alexander Monroe Dockery, M.D.; and the response to the same by Dr. F. H. Achelpohl, of St. Charles.

Additional clinics: D. N. Boatner, Trenton: New safe anesthetic for extracting and minor surgical operations. H. H. Sullivan, Kansas City: Table clinic, porcelain work, and a new crown system. D. J. McMillen, Kansas City: Porcelain crown. Frank McMillen, Kansas City: (Will swage seamless crown.) J. F. Wallace, Canton: Preparation of cavities, illustrating same in ivory tooth-forms. Edw. S. Brown, Edina: Method of seamless crown- and bridge-work. C. B. Sawyer, Jacksonville, Ill.: Gold filling, labio-cervical cavity, using a clamp of own design. R. J. Winn, Bolivar: Painless extraction. Otto J. Fruth, St. Louis: Gold inlays. A. C. Hewett, Chicago: (1) Combination filling of gold and amalgam to bar oral fluids; (2) Preparation of cavity painless by analgic use of chloroform (patient, a member of the association). J. K. Conroy, Belleville, Ill.: Alloy fillings with a view to the least possible amount of contraction.

Wednesday evening, lantern lecture by George Washington Cook, of Chicago: "Some Pathological Changes in Tissue Illustrated with Exhibition of Bacteriological Specimens."

Thursday evening no session, on account of reception at the Executive Mansion given by Governor and Mrs. A. M. Dockery, complimentary to members of Missouri State Dental Association and visitors.

Hotel rates at Jefferson City \$2.00 to \$3.00 per day. Railroad rates of one and one-third fare on the certificate plan have been secured.

GEO. W. TAINTER, JR., Jefferson City,

C. D. LUKENS, St. Louis,

J. C. PASQUETH, Mexico, *Ex. Com.*

## LEBANON VALLEY DENTAL ASSOCIATION.

THE twenty-seventh annual meeting of the Lebanon Valley Dental Association will be held in Lebanon, Pa., at the Eagle Hotel, Tuesday and Wednesday, May 20 and 21, 1902.

A general invitation is extended to the profession. An interesting program assured.

C. R. SCHOLL, *Ch'man Ex. Com.*,

Reading, Pa.

## ARKANSAS BOARD OF DENTAL EXAMINERS.

THE Arkansas State Board of Dental Examiners will hold a meeting in Little Rock May 13 and 14, 1902. All candidates for licenses should bring material and instruments to demonstrate their ability in operative dentistry.

W. H. MARSHALL, *Sec'y.*

### MISSISSIPPI BOARD OF DENTAL EXAMINERS.

THE Mississippi Board of Dental Examiners will hold its annual examinations on Tuesday, May 27, 1902.

J. P. BRADSTREET, *Pres.*,  
W. R. WRIGHT, *Sec'y.*

---

### FLORIDA STATE BOARD OF DENTAL EXAMINERS.

THE annual meeting of the Florida State Board of Dental Examiners for the examination of applicants to practice dentistry in Florida will be held in Daytona on May 27, 1902. Any information concerning the examination will be given by the secretary.

W. G. MASON, *Pres.*  
F. B. HANNAH, *Sec'y*,  
Umatilla.

---

### COLORADO STATE BOARD OF DENTAL EXAMINERS.

THE Colorado State Board of Dental Examiners will meet in the Capitol Building, Denver, Colo., Tuesday, June 3, 1902, at 9 A.M., to examine applicants for license to practice dentistry in Colorado. In addition to written and oral examination, applicants must supply their own patients, instruments, and materials, and come prepared to do practical work. All applications must be completed prior to June 3d. For application blanks and information, address

H. F. HOFFMAN, *Sec'y*,  
611 California Bldg., Denver, Colo.

---

### GEORGIA STATE BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Georgia will hold its regular annual meeting on June 10, 1902, in the city of Macon, for the purpose of examining applicants for license to practice dentistry, and for transacting such other business as may come before it.

All applicants will be required to exhibit their diplomas for record and examination before their names will be enlisted.

D. D. ATKINSON, *Sec'y*,  
Brunswick, Ga.

---

### LOUISIANA STATE BOARD OF DENTISTRY.

THE next examination by the Louisiana State Board of Dentistry will be held in the city of New Orleans during the first week of May, 1902. The requirements for registration, with license to practice dentistry in Louisiana, are as follows: (a) A good moral character. (b) Twenty-one years of age. (c) Graduation in dentistry from a college belonging to the National Association of Dental Faculties, or recognized by the National Association of Dental Examiners. (d) An examination by the Louisiana State Board of Dentistry in the following branches: Anatomy, Physiology, Chemistry, Materia Medica, Therapeutics, Pathology, Dental Surgery and Oral Surgery, Microscopy, Histology, Prosthetic Dentistry, Operative Dentistry, and Metallurgy. Average, 75 per cent. (e) Fee, twenty-five dollars, payable in advance.

L. A. HUBERT, *Att'y, Sec'y*,  
137 Carondelet street, New Orleans, La.

## NORTH CAROLINA STATE BOARD OF DENTAL EXAMINERS.

THE North Carolina State Board of Dental Examiners will meet Monday, Tuesday, and Wednesday, June 16, 17, and 18, 1902, at Raleigh, N. C. For further information write the undersigned.

R. H. JONES, *Sec'y*,  
Winston, Salem, N. C.

---

## NATIONAL DENTAL ASSOCIATION—SECTION IV.

THOSE who will present papers upon the subjects of Etiology, Physiology, Hygiene, Prophylaxis, and Electricity will kindly communicate with the chairman of the Section, J. D. Patterson, Kansas City, Mo., or to

EMMA EAMES CHASE, *Sec'y*,  
3334 Washington ave., St. Louis, Mo.

---

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE nineteenth annual convention of the National Association of Dental Faculties will convene in the ball-room of the International Hotel, Niagara Falls, N. Y., July 24th next. The executive committee will meet at 11 A.M. July 23d. All colleges are respectfully referred to the rule requiring that their annual announcement be in the hands of the executive committee at this meeting.

H. B. TILESTON, *Pres.*,  
S. W. FOSTER, *Sec'y Ex. Com.*,  
N. A. D. F.

---

## ARMY DENTAL CORPS.

G. O. 3, JAN. '6, 1902. DEPT. OF SOUTH PHILIPPINES.

THE following routes are established for contract dental surgeons on duty in that department:

For Contract Surg. E. Lauderdale, Iloilo, Panay: The stations on the islands of Panay and Negros.

For Contract Dental Surg. E. P. Stone, Cebu, Cebu: The stations on the islands of Cebu and Bohol, and those on the west coast of Leyte and on the north coast of Mindanao.

For Contract Dental Surg. J. C. Whinnery, Tacloban, Leyte: The island of Samar and the east coast of Leyte.

For Contract Dental Surg. S. W. Hussey, Zamboanga, Mindanao: The stations on the south coast of Mindanao, those in the Sulu Archipelago, the islands of Paragua, Cuyo, and the Calamianes group.

Contract Dental Surg. G. L. Mason will be equipped for dental work in all its branches, and will be kept continuously on duty at Cebu, island of Cebu, to meet the increased work incident to the establishment of Department Headquarters at Cebu, and to treat cases that would otherwise require being sent to Manila.



G. O. 26, MARCH 15, 1902, H. Q. A. A. G. O.

By direction of the Secretary of War, the following rules and regulations regarding the official relations of the contract dental surgeons authorized by the act of Congress approved February 2, 1901, as published in General Orders No. 9, February 6, 1901, from this office, and their enlisted assistants, to the medical department at military posts where dental surgeons may be serving, are published to the army for the information and guidance of all concerned:

1. Contract dental surgeons have no official relation to the surgeon of the post, neither have their enlisted assistants detailed under the provisions of paragraph 1581 of the Regulations, except that they may occasionally be attached to the Hospital Corps detachment for rations and quarters.

2. Contract dental surgeons and their enlisted assistants will be mustered on a muster roll which the contract dental surgeon will sign.

3. Should it for any reason be necessary to recommend the excuse from duty of an officer or enlisted man on account of dental disease, the contract dental surgeon will report the case to the surgeon of the post, who will take it up on his register of sick and wounded, but in other cases no report of dental operations will be made except by the contract dental surgeon.

By command of Lieutenant General Miles:

H. C. CORBIN, *Adjutant General,*  
*Major General, U. S. A.*

#### CHANGES IN STATIONS.

WASHINGTON, March 29, 1902.—Contract Dental Surgeon George M. Decker is relieved from duty in the Department of Cuba, to take effect April 30, when he will proceed to Fort Logan, Colo.

Contract Dental Surgeon Alexander P. Bacon is relieved from duty in the Department of Cuba, to take effect April 30, 1902, when he will proceed to Fort Clark, Tex., for duty.

---

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING MARCH, 1902.

- 
- March 4.*—No. 694,526, to WELBY W. BURGIN. Chip-blowing attachment for dental engine.
- " "—No. 694,637, to JAS. F. HARDY. Elevating and controlling mechanism.
- " "—No. 694,683, to GIDEON SIBLEY. Back-rest for dental chairs.
- " "—No. 694,684, to GIDEON SIBLEY. Head-rest for dental chairs.
- " 11.—No. 695,092, to JAMES W. COWAN. Dental floss-holder.
- " "—No. 695,338, to GEORGE J. PAYNTER and FRANK C. WATSON. Combined light and mirror.
- " 18.—No. 695,625, to FINIS E. ROACH. Crown soldering pliers.
- " "—No. 695,796, to ASA F. COGSWELL. Artificial denture.
- " "—No. 695,715, to CHARLES P. FRITZ. Vulcanizer.
- " 25.—No. 696,099, to MERRILL W. HOLLINGSWORTH. Artificial tooth.
- " "—No. 696,120, to CLARENCE R. VANDERPOOL. Dental gage.
- " "—No. 696,155, to ISAAC N. WILLIAMS. Guard attachment for dental engines.

# A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

- Balcam** (E.-E.) \*Ostéo-sarcome du maxillaire supérieur chez les enfants. Bordeaux, 1900, P. Cassignol, 48 pp., 2. l., 2 pl. 8°.
- Thiesing** (H.) Die Lokal-Anästhesie und ihre Verwendung in der zahnärztlichen Praxis. Leipzig, 1902, A. Felix, 3 p. l., 69 pp. 8°.
- Abloff** (W. A.) Der Zustand der Zähne bei den Arbeitern in Pulverfabriken (rauchloses Pulver). Deutsche zahnärztl. Wehnschr., Wiesb., 1902, iv, 437-439.—**Allan** (C. F.) What should be the relation of our government to the dental profession? Internat. Dent. J., Phila., 1902, xxiii, 149-156. [Discussion], 172-175.—**Ames** (W. V.-B.) Some amalgam experiments. Brit. J. Dent. Sc., Lond., 1902, xlv, 156-159.—**André**. Actinomyose de la région angulo-maxillaire. Rev. méd. de l'est, Nancy, 1902, xxxiv, 117-120.—**Babcock** (A. A.) New kind of banded Logan crown. Dominion Dent. J., Toronto, 1902, xiv, 104-106.—**Barberá** (F.) Los fibromas de la faringe. Rev. valenc. de cien. méd., Valencia, 1902, iv, 1-14.—**Barrett** (W. C.) Professional education in America and Europe. Dental Cosmos, Phila., 1902, xlv, 234-245.—**Barton** (T. T.) The need of original research. Dental Rec., Lond., 1902, xxii, 108-112.—**Bauer** (S.) Opisthognathia (dentalis superior) egy esete. [A case of . . . .]. Magyar fogász. szemle. A stomatol. [etc.], Budapest, 1902, vi, 5-9.—**Beacock** (D. V.) Vaccination a prime factor in the destruction of children's teeth. Dental Summary, Toledo, 1902, xxii, 70-76.—**Berezovski** (S. E.) [Technique of formation of new joint in ankylosis of the lower jaw.] Khirurgia, Mosk., 1901, x, 575-580.—**Bockhart** (M.) Ueber die Behandlung der Leukoplakia buccolingualis. Monatsh. f. prakt. Dermat., Hamb., 1902, xxxiv, 164-166.—**Boom** (H. H.) Urinalysis for the dentist. Items Interest, N.Y., 1902, xxiv, 179-181.—**Bosart** (H. J.) Making an inlay matrix. Dental Reg., Cincin., 1902, lvi, 95.—A successful method of obtaining a perfect matrix for porcelain inlay work. Dental Summary, Toledo, 1902, xxii, 11.—**Briegleb** (K.) Cyste im-Unterkiefer. Deutsche Praxis. Ztschr. f. prakt. Aerzte, Munchen, 1902, xi, 129.—**Brocq, Monier & Civatte**. Néoplasie de la face dorsale de la langue. Bull. Soc. franç. de dermat. et syph., Par., 1901, xii, 463-468.—**Bromell** (I. N.) Burs and bur shavings. Proc. Penn. Dent. Soc. 1901, Phila., 1902, xxxiii, 78-95.—**Bruck** (W. W.) Die Nothwendigkeit Einführung der Zahnpflege im Heere. Militaerarzt, Wien, 1902, xxxvi, 17-25.—**Caldwell** (Geo. Worthington) [1844-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 299.—**Capdepont**. Trois nouveaux cas de folliculite expulsive des nouveau-nés suivis de mort. Rev. de stomatol., Par., 1902, ix, 65-77. [Discussion], 111-116.—**Capon** (F. J.) Lectures on crown- and bridge-work. Dominion Dent. J., Toronto, 1902, xiv, 41-46.—**du Castel**. Syphilis du pharynx. Rev. gén. de clin. et de therap., Par., 1902, xvi, 81-84.—**Cathcart** (C. W.) Note on securing the lingual artery in excising the tongue through the mouth. Scot. M. & S. J., Edinb., 1902, x, 238.—**Chompret**. Irrégularité dans le nombre des dents. Rev. de stomatol., Par., 1902, ix, 31; 85.—**Christensen** (C.) Ein rationeller Artikulator. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 54-69.—**Clapp** (G. W.) The moral side of dentistry. Dental Reg., Cincin., 1902, lvi, 55-65.—**Clark** (H.) Concerning the chemistry of tooth discoloration. Dominion Dent. J., Toronto, 1902, xiv, 50-61.—**Clayton** (J. R.) A study of gold and tin combined as a means of saving teeth. Dental Brief, Phila., 1902, vii, 121-127.—**Colyer** (S.) One defect in the L. D. S., Eng., examination: and some of its results. Dental Rec., Lond., 1902, xxii, 97-99.—**Comparative** value of cocaine and eucaïne. Report of committee read by Dr. J. A. Cronkhite, Southern California Dental Association, Oct., 1901. Pacific Dent. Gaz., San Fran., 1902, x, 153-156.—**Constant** (T. E.) The movements of the mandible. Brit. J. Dent. Sc., Lond., 1901, xlv, 774; 817; 867; 915; 963; 1011; 1066; 1119.—Also, *transl.*: Progrès dent.,

- Par., 1902, xxix, 33-40.—**Corley** (J. P.) Oral hygiene. Dental Digest, Chicago, 1902, viii, 114-117.—**Danlos**. Former rare de chancre lingual. Ann. de dermat. et syph., Par., 1902, 4. s., iii, 154.—**Hérédosyphilis sans lésion dentaire**. *Ibid.*: 155.—**Deroque** (P.) Le chlorure d'éthyle anesthésique général. Rev. méd. de Normandie, Rouen, 1902, 63-77.—**Dervaux & Danel**. Epithélioma de la face simulant un ostéo-sarcome du maxillaire chez un homme âgé. J. d. sc. méd. de Lille, 1902, i, 135-141.—**Ehrmann** (J.) Considérations sur la palatoplastie en deux temps dans les divisions congénitales du palais. Gaz. méd. de Strasb., 1902, lxi, 1; 9.—**Fenchel**. Fosfoementi. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 61-71.—Metodi per misurare esattamente il cambiamento di forma delle amalgame. *Ibid.*: 49-52. [Discussion], 75.—**Ferrier** (J.) Causes de la pitié sur la prise des empreintes. Rev. de stomatol., Par., 1902, ix, 96-103.—**Gagen-Torn** (I. E.) [Proliferating cysts of the jaws and splints in resection of the lower jaw.] Laitop. russk. chir., S.-Peterb., 1901, vi, 863-882.—**Genese** (D.) A new impression material. Dental Summary, Toledo, 1902, xxii, 123.—**Gessner** (H. B.) Clinical report of two cases of osteo-sarcoma of the inferior maxillary treated by excision; report of the condition of the patients after one year. Am. Med., Phila., 1902, iii, 385-387.—**Gillies** (S.) Facial neuralgia. Austral. J. Dent., Melbourne, 1901-2, v, 134-143.—**Gilmer** (T. L.) Odontomes. Dental Summary, Toledo, 1902, xxii, 17-19.—**Goslee** (H. J.) The shell or telescope crown. Items Interest, N.Y., 1902, xxiv, 161-165.—**Gourc**. Fracture spontanée de plusieurs dents dans toutes leur hauteur chez une arthritique. Rev. de stomatol., Par., 1902, ix, 94-96. [Discussion], 110.—**Grady** (R.) Oral hygiene; report of committee. Dental Digest, Chicago, 1902, viii, 117-122.—**Griffiths** (J.) Dental education. Dental Reg., Cincin., 1902, lvi, 117-131.—**Guttmann**. Nuovi metodi di preparazione ed applicazione delle otturazioni in porcellana. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 45-48.—**Guy** (W.) Prosthesis in cleft palate. Dental Rec., Lond., 1902, xxii, 103-106.—A quick method of making inlays for large cavities. *Ibid.*: 106.—**Harbison** (H. P.) Report of committee on painless dentistry. Pacific Dent. Gaz., San Fran., 1902, x, 78-81.—**Hawley** (C. A.) The cohesion of gold. Dental Reg., Cincin., 1902, lvi, 79-94.—*Also*: Dental Summary, Toledo, 1902, xxii, 1-10.—**Head** (J.) The relation of inlays to combination fillings. Dental Brief, Phila., 1902, vii, 127-130. [Discussion], 144-146.—Bleaching enamel. Dental Summary, Toledo, 1902, xxii, 68.—Bleaching of enamel and dentine. Items Interest, N.Y., 1902, xxiv, 175-178. [Discussion], 202-210.—**Heise** (O. N.) Dentistry as a specialty in medicine. Dental Digest, Chicago, 1902, viii, 100-109.—**Höncz** (K.) A stomatologia viszonya a többi szaktudományhoz. [The relation of stomatology to other special sciences.] Magyar fogász. szemle. A stomatol. [etc.], Budapest, 1901, v, 251; 279; 311; 313.—**Hopewell-Smith** (A.) Cementum. Dental Rec., Lond., 1902, xxii, 101.—**Hume** (G. G.) Gold crown. Dominion Dent. J., Toronto, 1902, xiv, 46-50. [Discussion], 62.—**Imbert** (L.) & **E. Jeanbrau**. Un cas de grenouillette sublinguale; son origine congénitale. Montpel. méd., 1902, xiv, 193-198.—**Jarvis** (R. D.) A plea for more artistic work in dental prosthesis. Dominion Dent. J., Toronto, 1902, xiv, 106-108.—**Jaulusz** (H. J.) Obturators carrying dressings in suppurative cleft palate. Items Interest, N.Y., 1902, xxiv, 167-169.—**Jenkins** (N. S.) The use of hot carbolic acid. Dental Cosmos, Phila., 1902, xlv, 245.—**Johnson** (J. A.) A new vacuum chamber. Items Interest, N.Y., 1902, xxiv, 165-167.—**Josipowici**. Zur Aetiologie der Pyorrhoea alveolaris. Deutsche Zahnärztl. Wehnschr., Wiesb., 1902, iv, 453.—**Junkerman** (G. S.) Will a high preliminary educational requirement remove the existing evil? Dental Reg., Cincin., 1902, lvi, 109-117.—**Kersting** (G.) Abnutzung der Zähne. Wien. med. Wehnschr., 1902, lii, 464-468.—**Kien** (G.) Ueber eine seltene Form von Hypertrophie der Gaumensillen. Ztschr. f. Ohrenh., Wiesb., 1901-2, xl, 337-342, 1 pl.—**Kleinmann**. Ueber die Verwendung der Stomatolpaste bei Wurzelfüllungen. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 65.—**Kronfeld** (R.) Die dentalen Symptome des Diabetes mellitus und der Tabes dorsalis. J. f. Zahnh., Berl., 1902, xvii, no. 3.—**Landsberger** (R.) Die Zukunft der Zahnheilkunde. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 1-9.—**Laslett** (E. E.) A case of cancerum oris affecting both sides. Lancet, Lond., 1902, i, 513.—**Lebedinsky & C. Lee**. Contribution à l'étude de la stomatite ulcéro-membraneuse. Rev. odont., Par., 1902, xxi, 51-68.—**Lenglet** (E.) Conduite à tenir en présence d'une lésion néoplasique ulcéreuse indéterminée de la langue ou de la cavité buccale. Presse méd., Par., 1902, i, 222.—**Lepkowski** (W.) & **L. Wachholz**. O zebach pod wzgledem sadowo-lekarskim. [The teeth in legal medicine.] Przegl. dent., Warszawa, 1901, iv, 219; 262; 287.—**Lexer** (E.) & **W. Türk**. Zur Operation des Ganglion Gasseri nach Entfahrungen an 15 Fällen nebst einem Anhang: Zusammenstellung der ausgeführten. Exstirpationen des Ganglion Gasseri. Arb. a. d. chir. Klin. d. k. Univ., Berl., 1902, xvi, 239-324.—**Loup** (A.) De la désinfection des dents; nocivité de la déshydratation absolue. Réplique à M. Choquet. Odontologie, Par., 1902, 2. s., xiv, 53-65.—**Macvane** (S. M.) The college course and professional training. Internat. Dent. J., Phila., 1902, xxiii, 156-168. [Discussion], 190-204.—**Mahé**. Note pour servir à l'histoire de la déshydratation dentinaire. Odontologie, Par., 1902, 2. s., xiv, 105-113.—**Mamlok** (H. J.)

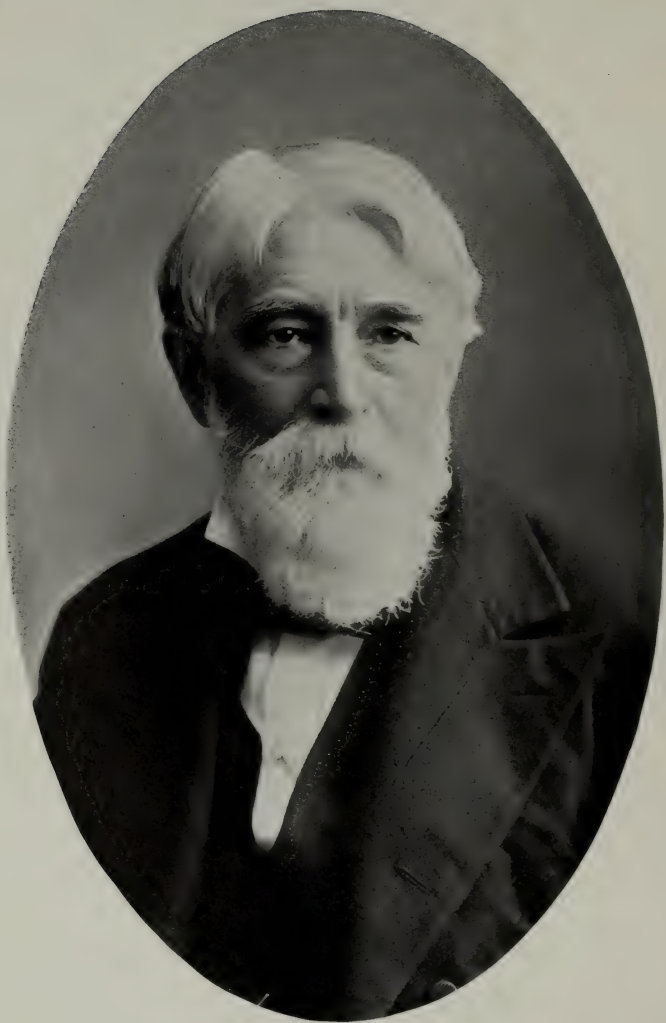


- Eine abnehmbare Porzellankrone. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 50-54.—**Marchand**. Ein Tumor des ganglion Gasseri. *Deutsche med. Wchnschr.*, Leipz. u. Berl., 1902, xxviii, Ver.-Beil., 77.—**Marchant** (G.) Résection du nerf maxillaire inférieur et destruction du ganglion de Gasser; guérison. *Bull. et mém. Soc. de chir. de Par.*, 1902, n. s., xxviii, 194-197.—**Masur** (A.) Ueber Porzellanfüllungen nach Dr. Jenkins. *Deutsche Monatschr. f. Zahnh.*, Leipz., 1902, xx, 49-61.—**Maughan** (J.) The physiology of a laugh. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 97-102.—**Meadors** (J. T.)—Consideration of conditions of the interproximal space. *Dental Digest*, Chicago, 1902, viii, 110-114.—**Miller**. Das zahnärztliche Unterrichtswesen in Amerika. *Deutsche zahnärztl. Wchnschr.*, Wiesb., 1901, iv, 369.—**Mills** (W. A.) Oral sepsis, necrobiosis, antiseptis and prophylaxis. *Dental Cosmos*, Phila., 1902, xlv, 219-225.—**Morestin** (H.) Cancer du maxillaire inférieur à point de départ gingival. *Bull. et mém. Soc. anat. de Par.*, 1901, lxxvi, 609-612.—**Morrison** (M. A.) Some things dentists know little about. *Dominion Dent. J.*, Toronto, 1902, xiv, 84-95.—**Oefele**. Casuistischer Beitrag aus einer Faeces-analyse zur Bedeutung des Molaren-gebisses. *Deutsche zahnärztl. Wchnschr.*, Wiesb., 1902, iv, 413.—Notwendigkeit der Molaren in den Prothesen. *Ibid.*: 421.—Technik der Faecesuntersuchungen zum Erweise ungenügender Molaren-arbeit. *Ibid.*: 429.—**Ögden** (F. R.) Incompatibilities. *Pacific Dent. Gaz.*, San Fran., 1902, x, 73-77.—**Pare** (J. W.) The hospital treatment of children's teeth. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 193-206.—**Payne** (C. S.) Dentistry; to restore the cheek and lips; following surgery of the jaw. *Pacific Dent. Gaz.*, San Fran., 1902, x, 83-87.—**Peter** (K.) Zur Bildung des primitiven Gaumens bei Mensch und Säugtieren. *Anat. Anz.*, Jena, 1901-2, xx, 545-552.—**Peters** (E. A.) The use of suprarenal in dental cases. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 206-213.—**Pitsch**. Le somnoforme. *Rev. de stomatol.*, Par., 1902, ix, 91-93. [Discussion], 105-110.—**Pullen** (H. A.) Conservative treatment in orthodontia. *Dental Cosmos*, Phila., 1902, xlv, 225-234. [Discussion], 284-287.—**Raoult** (A.) Du choix de l'intervention opératoire dans les kystes paradentaires de la région du maxillaire supérieur. *Ann. d. mal. de l'oreille, du larynx* [etc.], Par., 1902, xxviii, 29-35.—**Reboul** (J.) Sur l'anesthésie générale par le chloroforme, l'éther, le bromure d'éthyle, et en particulier, par le chlorure d'éthyle. *Bull. et mém. Soc. de chir. de Par.*, 1902, n. s., xxviii, 210-218.—**Reeves** (W. T.) Bodies and color effects in porcelain inlay work. *Dental Summary*, Toledo, 1902, xxii, 69.—**Regnier** (L.-R.) & **H. Didsbury**. Nouveau procédé d'analgésie des dents à l'aide de l'électricité. *Arch. d'électric. méd.*, Par., 1902, x, 71-78.—*Also*: *Bull. méd.*, Par., 1902, xvi, 143.—*Also*: *Compt. rend. Acad. d. sc.*, Par., 1902, cxxxiv, 373-375.—**Requa** (J.) Is decalcified necessarily devitalized dentin? *Dental Digest*, Chicago, 1902, viii, 181-185.—**Reusz** (F.) Idegbajok és száj-ürbeli tünetek kölcsönös összefüggése. [The connection of nerve troubles and phenomena of the buccal cavity.] *Magyar fogász szemle*. A stomatol. [etc.], Budapest, 1901, v, 287-292; 319; 347.—**Rispaal**. Del l'iodisme des glandes salivaires. *Echo méd.*, Toulouse, 1902, 2. s., xvi, 109-111.—**Rispaal & Laurens**. Epithélioma de l'épiglotte. *Ibid.*: 114-116.—**Ritter** (P.) Sui casi d'insuccesso nel lavoro a corona e a ponte. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 52-60.—**Robin** (P.) Tumeur sanguine d'origine dentaire. *Rev. de stomatol.*, Par., 1902, ix, 77-85.—**Apparecchi di protesi inghiottiti**. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 71-75.—**Instrumentarium und conische Porzellankegel zur Herstellung von Porzellan-Einlagen**. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 70-75.—**Roddy** (W. A.) Nitrous oxid in extraction. *Dental Digest*, Chicago, 1902, viii, 96-100.—**Roe** (W. J.) Hypertrophy of the gums. *Proc. Penn. Dent. Soc.* 1901, Phila., 1902, xxxiii, 28-33.—Neurectomy for tic douloureux; with report of five cases and exhibition of specimens removed. *Ibid.*: 156-177.—Will nitrous oxid and oxygen supplant ether and chloroform in general surgery and nitrous oxid alone in dental surgery? *Dental Cosmos*, Phila., 1902, xlv, 209-219.—**Römer**. Ueber Pulpapolyphen der Zähne. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 9-16, 2 pl.—**Root-filling clinic**. Reported by H. J. Goslee. *Dental Digest*, Chicago, 1902, viii, 122.—**Roy** (D.) Two unusual cases of hemorrhage following adenotomy and tonsillotomy. *Laryngoscope*, St. Louis, 1902, xii, 112-115.—**Ruggles** (S. D.) Hemophilia. *Dental Summary*, Toledo, 1902, xxii, 61-67.—**Rule** (F. H.) Inflammatory affections of the antrum of Highmore. *Dental Cosmos*, Phila., 1902, xlv, 249-261.—**Sage** (F. W.) The real attitude of the dental specialty toward medicine. *Dental Digest*, Chicago, 1902, viii, 187-194.—**Salomon** (H.) Új eljárás fémminták előállítására. [New process for restoring metal work.] *Magyar fogász szemle*. A stomatol. [etc.], Budapest, 1901, v, 293-297.—**de Sant' Anna Marques** (S.) Um caso de febre aftosa n'uma criança. *Med. contemp.*, Lisb., 1902, xx, 79.—**Schamberg** (M. I.) A statistical study of local anesthesia in dentistry. *Proc. Penn. Dent. Soc.* 1901, Phila., 1902, xxxiii, 48-78.—*Also*: *Dental Reg.*, Cincin., 1902, lvi, 137-142.—**Schwedischen** (Die) Caries-frequenzuntersuchungen. *J. f. Zahnh.*, Berl., 1902, xvii, Nos. 4; 5.—**Seitz** (A.) A case of double tongue. *Med. Rec.*, N. Y., 1902, lxi, 474.—**Shappard** (G.) Fractures des mâchoires et leur traitement. *Progrès dent.*, Par., 1902, xxix, 79-92.—**Shumway** (T. D.) Tin! A plea for more conservative methods in filling teeth. *Items Interest*, N. Y., 1902, xxiv,

- 181-191.—*Also*: Dental Digest, Chicago, 1902, viii, 194-205.—**Siffre** (A.) Dent de six ans et dent de sagesse. Rev. odont., Par., 1902, xxi, 68-74.—**Simpson** (F. E.) Suggestions to anesthetizers. Am. Med., Phila., 1902, iii, 354.—**Smirnoff** (G. I.) [Actinomycosis of the tongue in man.] Med. Obozr., Mosk., 1901, lvi, 504-509.—**Smith** (H. A.) Recurrence of caries under good fillings. Dental Digest, Chicago, 1902, viii, 91-96.—**Smith** (W. C.) Medication of pulpless teeth. Pacific Dent. Gaz., San Fran., 1902, x, 82.—**Spence** (S.) Experiments with plaster to test warpage. Items Interest, N. Y., 1902, xxiv, 169-174.—Partial dentures. Dental Summary, Toledo, 1902, xxii, 113.—**Sprenger**. Ein Fall aus der Praxis [folliculäre Cyste.] Deutsche Zahnärztl. Wchnschr., Wiesb., 1901, iv, 397.—**Stahr** (H.) Ueber die Papillae fungiformes der Kinderzunge und ihre Bedeutung als Geschmacksorgan. Ztschr. f. Morphol. u. Anthropol., Stuttgart., 1901-2, iv, 199-260, 4 pl.—**Stein** (A. E.) Zur Statistik und Operation der Geschwülste des Oberkiefers. Arb. a. d. chir. Klin. d. k. Univ. Berl., 1902, xvi, 52-77.—**Stellwagen** (T. C.) The dentistry of yesterday and to-day. Dental Brief, Phila., 1902, vii, 137-144.—**Stern** (D.) Adapting of facings and platinum posts to porcelain crowns without solder. Dental Summary, Toledo, 1902, xxii, 21.—**Stevenson** (H. A.) Anesthetics. Dominion Dent. J., Toronto, 1902, xiv, 95-100.—**Strickland** (S. L.) Nervanin. Pacific Dent. Gaz., San Fran., 1902, x, 157-160.—**Sunto** della relazione a S. E. il Ministro dell'istruzione pubblica sulle esigenze dello insegnamento odontoiatrico, da parte della Sezione odontoiatrica dell'Ordine dei sanitari di Napoli e provincia; relatore il Sig. Vincenzo Guerini, di Napoli. Gior. di corrisp. pei dentisti, Milano, 1902, xxxi, 22.—**Teweles** (F.) Ein Fall von Struma der Zungenwurzel. Wien. klin. Wchnschr., 1902, xv, 204.—**Thevenot** (J.-B.) Note sur deux cas d'actinomycose cervico-faciale. Arch. prov. de chir., Par., 1902, xi, 58-61.—**Thiesing**. Neuere Extractionsinstrumente. Deutsche Monatschr. f. Zahnheilk., Leipz., 1902, xx, 62-64.—**Trambusti** (A.) Sulla etiologia del noma. Policlin., Roma, 1902, ix, sez. med., 1-11, 1 pl.—**Trolard** (A.) Note sur l'innervation de la région parotido-massétéline. Bull. et mém. Soc. anat. de Par., 1901, lxxvi, 578-580.—**Trueman** (W. H.) Origin of the Pennsylvania Association of Dental Surgeons. Dental Brief, Phila., 1902, vii, 130-136.—**Trumpp**. Chloroformnarkose ohne Maske mittels Kehlkopf-Kanüle. München. med. Wchnschr., 1902, xlix, 413.—**Tsutsui** (Y.) [On the surgical operation on the œsophagus for the ex-
- traction of false teeth.] Tokyo Iji-Shin-shi, 1902, 63-67.—**Walkhoff** (O.) Die normale Histologie menschlicher Zähne einschliesslich der mikroskopischen Technik. Odont. Bl., Berl., 1901-2, vi, 404-408.—Beitrag zur Dentinanästhesie durch Kohlensäure. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 17-23.—**Weaver** (S. M.) Esthetic principles of Logan crowns. Dental Summary, Toledo, 1902, xxii, 57-61.—**Wedelstaedt** (E. K.) A method of preparing and filling a mesio-occlusal cavity in an upper second bicuspid. Dental Reg., Cincin., 1902, lvi, 131-136.—**Weill**. Ein Fall von mikroskopisch nachgewiesenem, mit Pyocyaninm cœrulum geheiletem Cancroid. Deutsche med. Wchnschr., Leipz. u. Berl., 1902, xxviii, Ver.-Beil., 85.—**Weiser**. Studien und Beiträge zur Technik der Mundchirurgie. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 28-50.—**Weisse** (F. D.) Internationale zahnärztliche Nomenclatur mit Symbolen in Formeln zu gebrauchen. Deutsche Monatschr. f. Zahnheilk., Leipz., 1902, xx, 66-70.—**Wilson** (G. H.) Porcelain. Proc. Penn. Dent. Soc. 1901, Phila., 1902, xxxiii, 33-47.—**Wilson** (T. W. L.) Medicine as applied to the science of dentistry. Austral. J. Dent., Melbourne, 1901-2, v, 106; 125.—**Wright** (C. M.) First molar necessary to dentists' financial success. Dental Digest, Chicago, 1902, viii, 185.—Septic gingival catarrh; disease of the gum borders and sockets of the teeth. Brit. J. Dent. Sc., Lond., 1902, xlv, 145-156.—**Zahnheilkunde** (Die) bei den Alten und ihre Lostrennung von der allgemeinen Medizin. Deutsche Zahnärztl. Wchnschr., Wiesb., 1901, iv, 370-373.—**Zander** (E.) Tod durch einen Zahn. *Ibid*: 405.—**Zboril** (C.) iii-ci zjazd Przyrodników i Lekarzy Czeskich w Pradze. Sekcja Stomatologiczna. [Third session of Bohemian congeners and physicians in Prague.] Stomatological section. Przegl. dent., Warszawa, 1901, iv, 233; 275; 307.—**Ziegler** (D. H.) Nitrous oxide and oxygen in dental surgery. Dental Reg., Cincin., 1902, lvi, 66-79.—*Also*: Dental Summary, Toledo, 1902, xxii, 114-123.—**Zielinski** (W.) O protetycznym leczeniu braków podniebienia. [Prosthetic treatment of absence of the palate.] Przegl. dent., Warszawa, 1901, iv, 253; 294.—**Zsigmondy & Weiser**. Report of dental education in Austria. Brit. J. Dent. Sc., Lond., 1902, xlv, 103-106.—**Zwillinger** (H.) Ueber die Beziehungen der hyperplastischen Rachentonsille zur Taubstummheit; (Auf Grund von Untersuchungen, angestellt an den Zöglingen des kön. ung. Staatl. Taubstummeninstitutes zu Budapest). Pest. med.-chir. Presse, Budapest, 1902 xxxviii, 148; 169.







Benjamin Lusk

THE  
DENTAL COSMOS.

VOL. XLIV.

PHILADELPHIA, JUNE, 1902.

No. 6.

ORIGINAL COMMUNICATIONS.

HISTOLOGY OF THE MAXILLARY AND MANDIBULAR BONES.

BY A. HOPEWELL-SMITH, M.R.C.S., L.R.C.P., L.D.S. ENG.,

Assistant Dental Surgeon, Royal Dental Hospital of London; Author of "Dental Microscopy."

THE hitherto published descriptions of the minute structure of the osseous framework of the lower face and jaw,—such structures as are, in a word, in direct anatomical relationship and continuity with the teeth of man,—have necessarily been given only very infrequently; but in addition to this, the descriptions which have appeared in text-books and journals have taken for granted that the histology of these particular bones corresponds with that of tabular and irregular bones in general.

It has lately fallen to the lot of the writer to prepare and examine sections of different portions of the maxillæ and mandible, and he has found with surprise and interest that in two essentials the bones of the jaws differ from bone elsewhere. These are discussed later on; but it may at once be said that the writer knows of no allusion, printed or otherwise, to these differences, and he is therefore glad to have an opportunity of putting them on record in the pages of the DENTAL COSMOS. For, while it cannot be claimed that a knowledge of these variations from normal types would produce many alterations in the recognized methods of treatment in case of disease, there should be no limits to original research in important or somewhat recondite subjects.

To make this contribution complete, a few forewords are necessary and advisable.

*General characteristics.* The manner in which the mandible is developed is twofold,—cartilaginous and membranous. The anterior part of Meckel's cartilage becomes ossified, and centers of ossification for the condyle and angle also appear. Centers of ossification begin in the membrane on the outer surface of Meckel's cartilage; also in the membrane in the inner surface of the sockets

of the teeth. Each maxilla is developed from centers which arise in membrane.

Both forms of bone, known as compact (smooth, dense, and ivory-like) and cancellated or spongy (rough, open, and soft) are met with in the jaws. The former is found covering each surface both of maxillæ and mandible, the latter constituting the intervening tissue, which in the case of the lower jaw is similar to the diploë of the cranial bones. The compact forms a somewhat thicker shell or crust on the external and internal surfaces of the mandible than on any portion of the maxillæ.

#### HISTOLOGY.

Before considering the special histology of the bones of the jaws, a brief description of the structure of osseous tissue generally must be given.

Bone of the jaw, as bone elsewhere, consists of a calcified fibrous ground-substance or matrix arranged as lamellæ around spaces of varying shape, size, and contents which everywhere penetrate it in all directions. Of these the following are to be noted: (a) Haversian systems, (b) lamellæ, (c) periosteum, and (d) Sharpey's fibers.

(a) An Haversian system consists of an Haversian canal, several lamellæ, with numerous lacunæ and canaliculi.

Interpenetrating everywhere are short longitudinal passages or tubes which in cross section appear as rounded or oval apertures, and, longitudinally cut, like short, straight, or slightly curved spaces of fairly regular diameter throughout. These are the Haversian canals. The largest may measure  $100\mu$  in width, the smallest  $20\mu$ , the average size being about  $50\mu$ .

They are surrounded by lamellæ,—thin bands of bony material arranged concentrically round each canal. Dark and light alternate, the difference in the refraction being due to the fact that the opaque lines are occasioned by the calcified fibrils running longitudinally, and the clear zones by their running transversely. In consequence, the ends only of the fibrils are cut across. (See Fig. 7.)

Situated between these lamellæ are bone-lacunæ with their canaliculi. The first are flattened branched spaces, which may measure  $14\mu$  in their greatest diameter. (Stirling, "Outlines of Practical Histology," 1893.) In dried specimens they look like myriads of tiny dark, fusiform specks arranged with fairly uniform regularity between the lamellæ, and fully connected with each other and with the Haversian canals by means of many long, narrow tubes or canaliculi which cross the lamellæ. Each cavity is filled with or contains a bone-cell with a large oval nucleus, as first described by Virchow. These are homologous with those of ordinary connective tissue. The wall of each lacuna is formed of some substance which resists the action of decalcifying reagents in a similar manner to the sheaths of Neumann in dentin.

The contents of an Haversian canal, in the recent state, comprise several capillaries, small arteries and veins, a bundle of nerve-



fibrils, and a few lymphatic vessels, all imbedded in fine connective tissue, which is surrounded externally by a tough lining membrane possessing properties identical with those which obtain also in the membranous lining of the walls of the lacunæ.

(b) In addition to the concentric lamellæ, others arranged parallel to the surface of the bone are called "circumferential" or "peripheric," while a third set, when found between the Haversian systems, are commonly spoken of as "intermediary." Their structures differ in no particular from the concentric lamellæ.

(c) The periosteum can be well studied microscopically in sections where the hard and soft parts have been retained *in situ*. Bony periosteum consists of two layers,—an outer, made up of white fibrous tissue, and an inner of the same with fine yellow elastic tissue fibers in addition. In developing bone, osteoblasts,—small, cubical, nucleated cells,—are also present in this inner layer.

(d) Sharpey's perforating fibers are noticed in thin strips of decalcified bone near the surface. They thus run in from the deep surface of the periosteum and pierce the peripheric lamellæ in a perpendicular or oblique direction. The fibrous bundles are of varying length and taper gradually to their free extremities. They are fasciculi of fibrils, probably of white fibrous tissue, though it has recently been shown that many of them are elastic fibrils. When they do not become calcified they shrink and leave tubes in channels in the dry bone. Sharpey also first demonstrated the presence of decussating transparent fibrils which constitute the main part of the lamellæ. (See Fig. 7.) In this way, in bone, Sharpey's discoveries include both perforating and decussating fibers, the former being bundles of fibrils, the latter an exceedingly delicate network of fibers. In dental histology Sharpey's fibers are the fibers which run from the periodontal membrane into the cementum; while his homologous fibers in dentin matrix were originally seen and described by Von Ebner\* and later by J. Howard Mummery.†

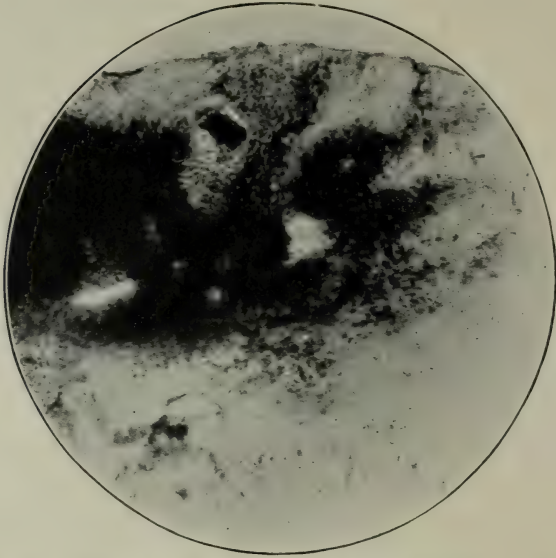
Turning now to the minute structure of several typical portions of the bones of the jaws, it will suffice to point out their distinguishing features.

(A) *Bone of Canine Fossa*.—In vertical lateral sections of the bone of a young subject (age ten and a half years), it is found that the greater part of the tissue is composed of a dense osseous substance but very scantily supplied with Haversian systems. Large areas of bone are quite devoid of either lamellæ, lacunæ, or canaliculi. (Fig. 1.) The matrix is distinctly coarsely granular (see Fig. 2), and has in it an indefinite number of short canals, the majority of which do not always communicate with lacunæ. These tiny tubular spaces probably in the recent state contain connective tissue fibrils, as they are too minute for the conveyance of blood-cells or even serum. They are most marked and most numerous in the neighborhood of the lacunæ, the canaliculi of which they somewhat resemble. Varying in length, their diameter measures about  $1\mu$ . Several are shown in the photomicrograph Fig. 2.

\*"Handbuch der Zahnheilkunde." Vienna, 1890-91.

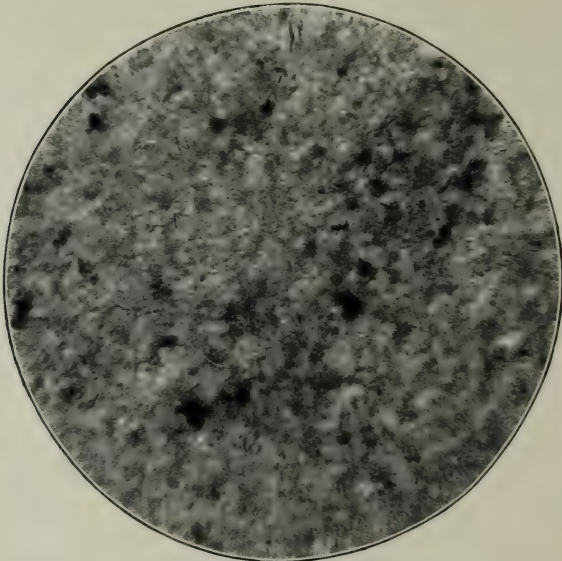
†Philos. Trans. Royal Society of London, 1891.

FIG. 1.\*



Vertical section of bone of canine fossa; from a dried specimen. ( $\times 45$ ; unstained.) Shows its general histological features. The dark masses are crowds of lacunæ, the lighter portions the ground-substance.

FIG. 2.



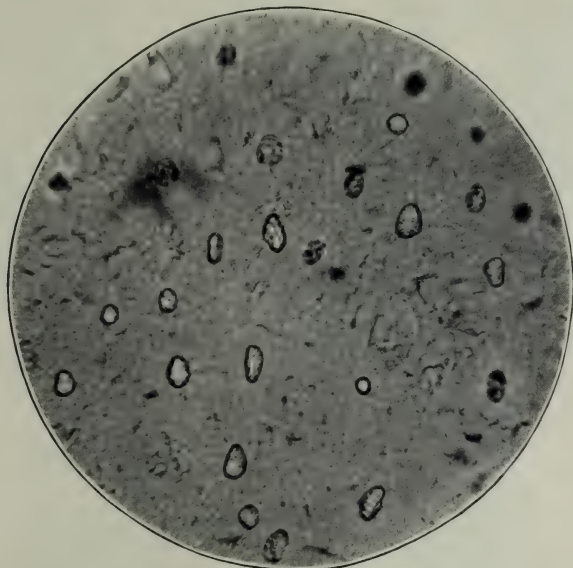
Granularity of the osseous matrix of the floor of the canine fossa. ( $\times 750$ ; unstained.) A few canals can be seen at the sinister corner.

\*The sections have been prepared and photographed specially for this paper by the author, and are now for the first time published. (*April, 1902.*)

The Haversian lamellæ, when they do occur, are but feebly marked. They do not present the usual microscopical characteristics of other bones, being very irregularly disposed in position and in shape, size, and constituents.

The lacunæ are massed together without order or regularity. Many are spherical in shape and absolutely unlike those of well-constructed compact bone, the majority being provided with short coarse offshoots, though great numbers are quite inermous. This last fact is of great interest, and probably has also some pathological significance. These lacunæ, as is well shown in Fig. 3, do

FIG. 3.



Inermous lacunæ from a dried specimen of the floor of the canine fossa. ( $\times 750$ ; unstained.) In the matrix a few short canals can be seen.

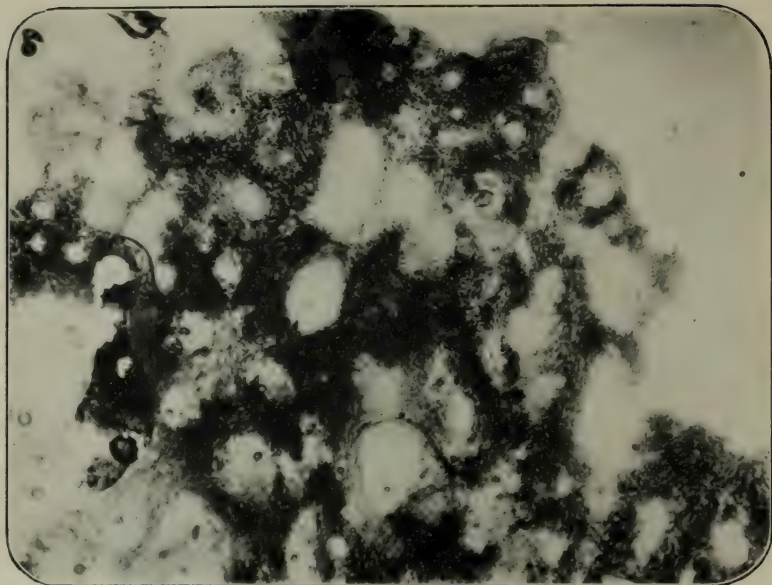
not possess, and they probably never did possess, canaliculi; their outlines are sharply defined rounded or oval contours, and under low magnifications rather simulate dentinal tubes cut transversely.

In addition to the granular matrix, the substance of the bone, thin though it is, contains numbers of broad channels of great length, which may perhaps, during life, act as venous carriers of the blood. Possessing no histological or physiological interest, they occur sufficiently commonly in this situation to warrant a passing reference.

(B) *The Interdental Septa*.—These are composed of cancellated bone the lattice-like character of which differs in no material degree from spongy bone elsewhere. The lamellæ are arranged, as a rule, in lines parallel to the edges of the large openings in the bone. The lacunæ are very numerous; a few are inermous, but by far the greater number possess canaliculi. (Fig. 4.)

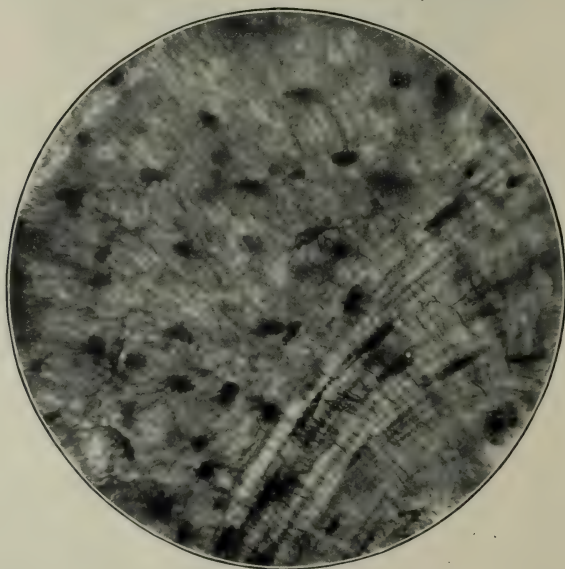


FIG. 4.



Vertical section of the bony septum between two maxillary premolars. ( $\times 40$ ; unstained.)

FIG. 5.

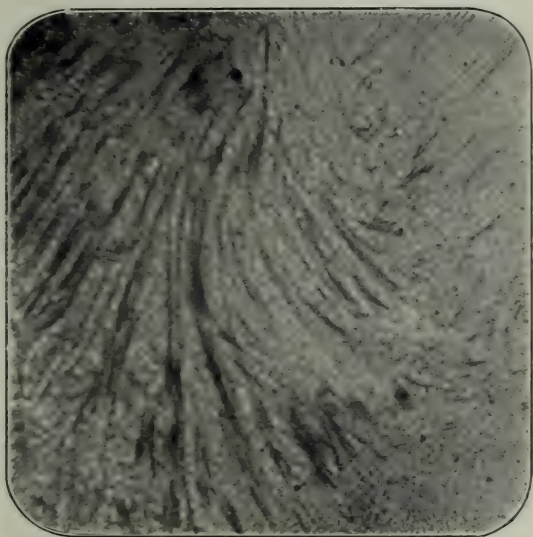


Sagittal section of the substance of the hard palate. ( $\times 750$ ; unstained.) The photograph exhibits the fusiform shape of the lacunæ in the lamellæ, and the rounder spaces elsewhere; also the connective tissue stroma of the matrix.

In the recent state the large open spaces in the bone are filled with quantities of red medullary tissue,—viz, delicate branching, retiform tissue supporting the marrow cells of Kölliker, and small colored nucleated cells many of which undergo subdivision by karyokinesis.

(C) *Hard Palate*.—Vertical antero-posterior sections of the roof of the mouth at the articulation of the palatal process of the maxillary with the horizontal plate of the palate bones, near the sutural line, all reveal the characteristics of dense osseous tissue thickly crowded with lacunæ and canaliculi (Fig. 5), and also several longitudinal spaces of large dimensions filled with marrow. The long axes of the lacunæ are more or less parallel to the long axes of the cancelli.

FIG. 6.

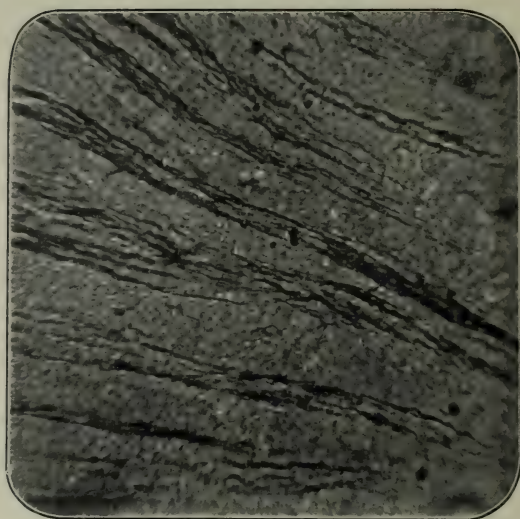


Radiating connective tissue fibers in the matrix of the bone of the wall of the maxillary sinus. ( $\times 250$ ; unstained.)

(D) *Nasal Wall of Antrum of Highmore*.—Here, as in the bone which makes the floor of the canine fossa, the matrix is very coarsely granular, and contains in places long markings, which are evidently the remains of the connective tissue stroma. (Figs. 6 and 7.) The lacunæ, which are exceedingly scanty, do not present the usual characteristics, being spherical or oval when viewed from above. (Fig. 8.) Some are concavo-convex as seen in side section. Again, the canaliculi are but very indifferently formed.

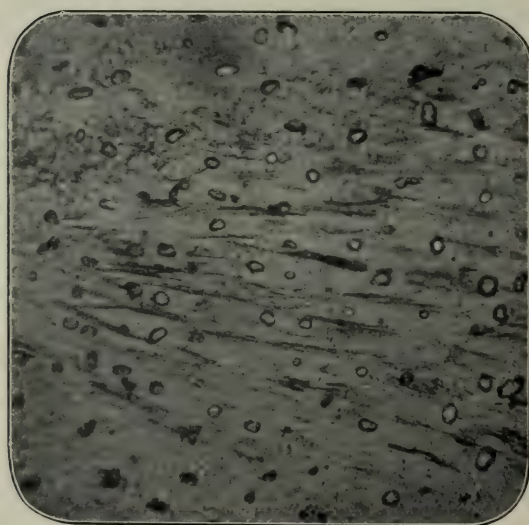
(E) *Angle of Mandible*.—Examination of the structure of vertical transverse sections exhibits best of all the pervious parts of the bones,—the regular disposition of the Haversian systems and peripheric and intermediary lamellæ. The first are not very numerous, and are seen mainly in cross section. The peripheric

FIG. 7.



Perforating fibers running lengthwise through the matrix of the bony wall of the maxillary sinus. ( $\times 800$ ; unstained.) The cut extremities of decussating fibers appear as white, round dots.

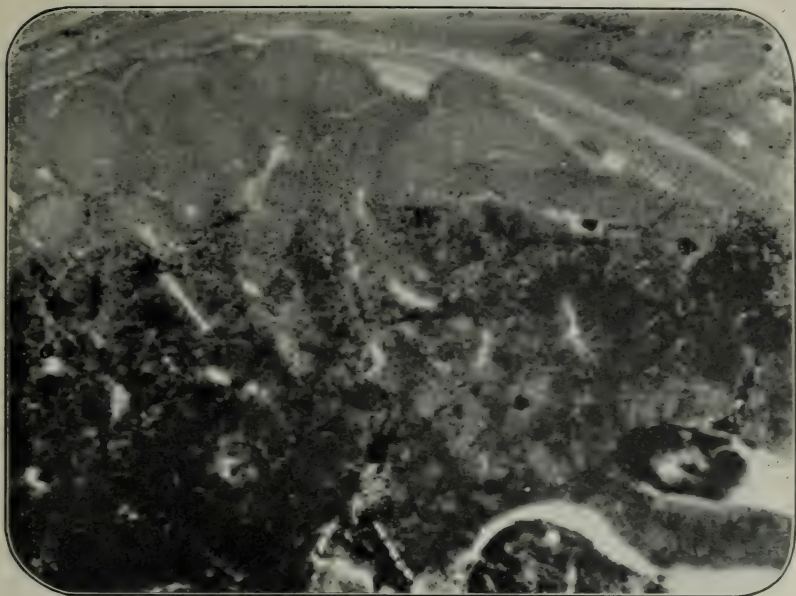
FIG. 8.



Inermous lacunæ amongst perforating fibers. Bone of antral wall. ( $\times 250$ ; unstained.)

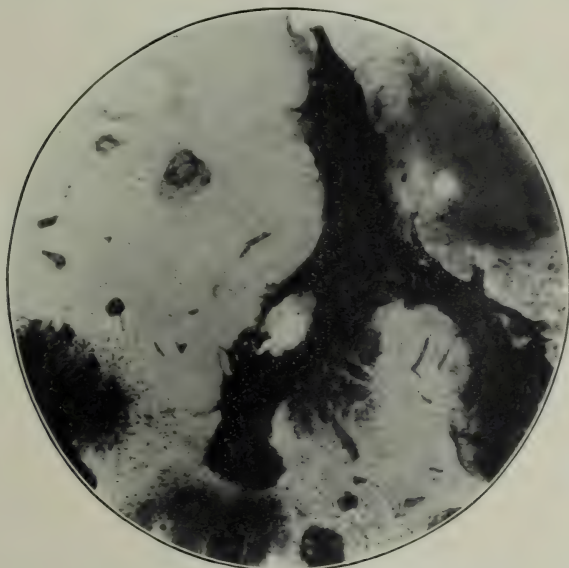


FIG. 9.



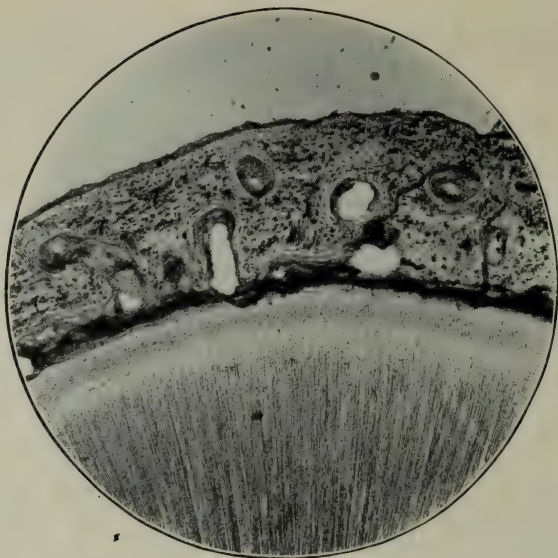
Vertical section of angle of the mandible; from a dried specimen. ( $\times 50$ ; unstained.) The section shows the general structure. At the upper part of the figure the long peripheric lamellæ are seen at the free edge of the bone, with intermediary lamellæ between the Haversian systems. At the lower part of the figure the commencement of the cancellous diploë-like portion is separated from the external surface by the dense layer of dark compact bone.

FIG. 10.



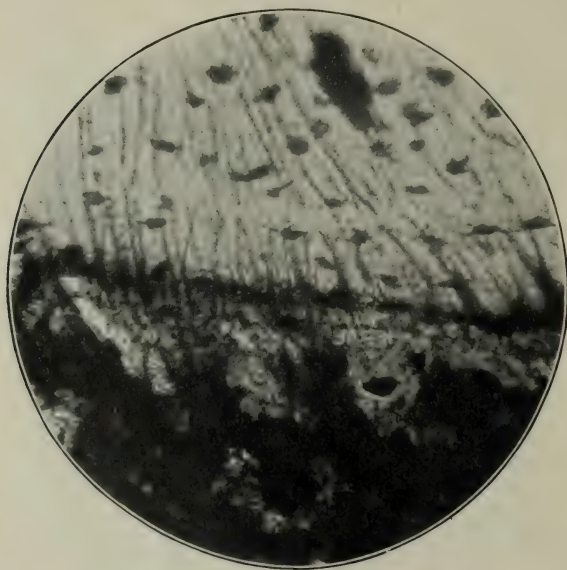
General structure of bone of the alveolus; from a recent specimen. The cancellous spaces and contents are too darkly stained to show any structure. ( $\times 40$ ; stained with fuchsin.)

FIG. 11.



Transverse section of alveolus *in situ*; from a dried specimen. ( $\times 40$ ; stained with borax-carmin.) In the upper part of the photograph is the free edge; below, the dentin and cementum, with the periodontal membrane intervening.

FIG. 12.



Perforating fibers of alveolus, passing into the periodontal membrane. ( $\times 800$ ; unstained.)

lamellæ are comparatively long, and the line of demarkation between the individual lamellæ very marked. (Fig. 9.) Strong lines of calcified connective tissue fibers can be observed, here and there, closely welding together the intermediary lamellæ even in bones of adult life (age thirty-five years). Internal to the free surface of the jaw, the cancellated tissue follows very much the lines already laid down.

Vertical lateral preparations of the same show absence of Haversian systems, but multitudes of lacunæ and canaliculi, and many radiating bands of calcified fibers.

(F) *Alveolar Process*.—Here are found all the appearances of soft cancellous bone, with Haversian systems and lacunæ well marked. (Fig. 10.) The cancelli run longitudinally in the same direction as the long axes of the teeth. Osseous tissue is dense externally (see Fig. 11), and the perforating fibers are very strong and of great length. (Fig. 12.)

CONCLUSIONS.—To sum up, the inference from the granularity of the matrix of the bone of the floor of the canine fossa and the walls of the antrum of Highmore, and also the scanty supply, in these regions, of inermous lacunæ, would seem to point to feeble reparative powers on the part of these bony structures in case of damage by traumatism or disease; and that special care should be taken by the operator when treating and injuring these regions, as the pronounced lack of nutritive agencies would most probably result in necrosis or caries, or even some still more serious lesion.

---

## TAKING PLASTER IMPRESSIONS OF MOUTHS IN WHICH THE TEETH FORM UNDERCUTS. A NEW METHOD, SECURING GOVERNANCE OF FRACTURE.

BY JOSÉ VALDERRAMA Y BARRENECHEA, DENTAL STUDENT, UNIVERSITY OF PENNSYLVANIA.

EVERY dentist is familiar with the difficulties which accompany the taking of plaster impressions of mouths in which some or all of the teeth are present. These difficulties are further increased when the teeth are irregularly placed and when their direction is such that the impression cannot be removed, we will not say without breaking it,—for that is almost an impossibility,—but without fracturing it into so many small and irregular pieces that the operation of fitting them together with wax becomes not only a very long, but also a very tedious task.

To avoid these difficulties we have adopted the following procedure which has given us satisfactory results, and which we believe will be especially useful to orthodontists, this class of practitioners being more likely than others to be called upon to take impressions of mouths in which all the teeth are present.

The method is as follows: An impression tray suited to the particular case is divided into *four pieces*, as shown in Fig. 1, the front piece embracing the incisors and possibly the canines, the two



FIG. 1.

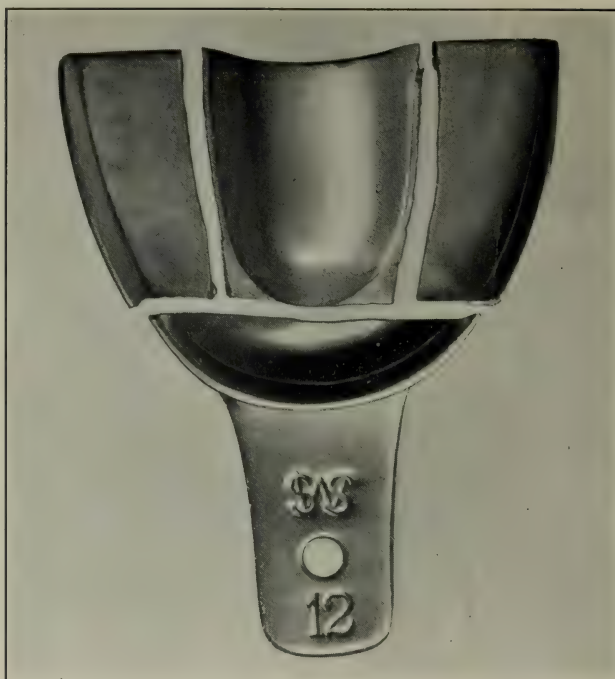


FIG. 2.



FIG. 3.



FIG. 4.



lateral pieces the teeth beyond the canines, and the fourth piece the roof of the mouth. The four pieces are then waxed together with hard wax and the impression is taken in the usual way. (Fig 2.)

In removing the impression, the purpose of having previously divided the tray at once becomes manifest.

The front section is first broken away,—*the fracture necessarily following the front dividing line of the tray.* (Fig. 3.) Then the lateral sections are removed in like manner, and finally the palatal portion. Each section of the divided tray carries with it its corresponding section of the impression, yielding a matrix in four parts (Fig. 4), readily adjustable by reason of the large fracture surfaces of plaster which serve as guides in accurate coaptation.

After all the sections are reunited with wax the impression is ready for the further steps usually taken in the preparation of a cast.

This plan of procedure is also very useful in view of the fact that it obviates the troublesome and annoying operation of first removing the tray and then cutting the impression.

It is, of course, to be understood that it is not imperative or essential to cut the tray always into four pieces only. If the practitioner judges that by cutting it into five or more pieces the operation is further facilitated in a given case, that should be done, the principle involved in this procedure being simply to divide the tray in such a way that the impression shall be fractured into large and regular pieces predetermined in size and direction by the section lines of the divided tray.

---

## AN ALVEOLAR ABSCESS WITH OPENING UPON THE OUTSIDE OF THE FACE, CAUSED BY DEATH OF THE PULP IN A THIRD MOLAR INDEPENDENT OF CARIES.

BY DR. L. G. NOEL, M.D., D.D.S., NASHVILLE, TENN.

(Read before the National Dental Association—Southern Branch, February 19, 1902.)

**I**N October last Mr. M., aged about thirty, residing in West Tennessee, applied for my advice about an abscess opening upon his face at a point about midway between the mental symphysis and the lower right third molar, and upon the body of the lower jaw. An examination of his teeth revealed no cavities that could be the cause of this condition, nor was there at this time any pain caused by tapping sharply upon his teeth with the handle of a heavy steel instrument. Upon questioning my patient, I brought out the following facts: He had had repeated swellings in the gum and underlying tissues about the lower right third molar, sometimes involving the throat, which would become intensely sore. These attacks had lasted sometimes for weeks at a time, and had been experienced at intervals through a period of six years (perhaps ever since the eruption of the third molar).

There was a rather crowded condition of the teeth in the jaw,



but not extraordinarily so; the third molar was fairly well placed and fully erupted. The last swelling and closure of the jaw had occurred in June and had been the most serious attack of all. The patient had sought the advice of a physician, who after a number of days of treatment had lanced the abscess from the outside of the face, discharging a great quantity of pus. From that time it had continued to discharge a thin offensive pus, irritating to the skin and soiling the clothing. At the time I first saw the case in October, all acute symptoms had passed, the patient had regained free use of the jaw, there was no tenderness upon percussion, the teeth were all tight in their sockets, and there was nothing but the appearance then presented and the history of the case to guide to a correct diagnosis.

My mind was, however, soon made up and I advised the immediate extraction of the third molar. When questioned by the patient as to whether this would end his trouble I expressed the belief that it would, but pointed out the possibility that a small area of necrosed bone might exist and have to be removed surgically before a cure could be effected. Being a very timid man he deferred the operation, sought the advice of other dentists and surgeons, and at last returned home without having anything done for his relief. After the lapse of a month he returned to me and timidly suggested his willingness to submit the case to me provided I would use anesthetics.

After the injection of one-half grain of nirvanin into the peridental membrane at several points around the neck of the third molar, I proceeded to extract it, and though firmly set, and difficult, I succeeded in accomplishing this without the fracture of either of its roots. I next proceeded to wash out the wound with a Pasteurine solution forced through a dental syringe, and was pleased to find a portion of the fluid escaping at the external opening. I then took the tooth to my bench vise in my laboratory and cracked it open. Here I was again lucky, for I had the good fortune to crack it along the line of the canal in the anterior root. The pulp had been dead for some time, but its chamber and much of the anterior canal were occupied by a mass of secondary dentin. I present this tooth with my report to verify the statement.

My theory is that the repeated swellings of the gum and peridental membrane around the neck of the third molar induced hyperemia of the pulp, which brought about the formation of secondary dentin. This condition of progressive degeneration of the pulp ended finally in its death and the formation of a true alveolar abscess.

When I assured my patient that he would recover without further surgical measures he expressed much delight, and told me that he had that day been examined by a surgeon who had assured him that he would have to have several teeth extracted from the affected side and a large portion of the jawbone sawed out. He had submitted himself to me feeling that he would be fortunate to come off with his life and a part of his face, and

oh, joy! he was only minus one useless third molar. The last time I saw my patient, something like two weeks after the extraction of the tooth, he was doing well. There had been no further discharge and the external opening had about closed.

## WHAT CHEMICAL INFLUENCE HAS SALIVA ON CEMENT?

BY J. E. HINKINS, D.D.S., CHICAGO, ILL.

(Read before the New York Odontological Society at its annual meeting, January 21, 1902.)

**I**N my paper on "The Disintegration of Cement Fillings,"<sup>1</sup> before the Third International Dental Congress at Paris, 1900, I had the honor to discuss with my colleagues the two distinct actions on cement,—viz, the mechanical attrition and the dissolution under the free margin of the gum,—taking account of the various cements as they have been promulgated by their inventors from 1870 to the present day.

The purpose was, first, to determine the composition of cements; second, to determine the amount of acid or alkali formed by common bacteria of the mouth; third and last, to see whether those acids or alkalies will dissolve or injure cement. The question now arises, What chemicals are contained in saliva that will influence the cement? We will therefore review the literature of the various analyses and constituent elements of saliva.

Saliva is secreted by several glands situated in the mouth, and represents in its mixed condition a viscid, generally slightly alkaline, tasteless, inodorous liquid of a specific gravity of 1.002 to 1.008. It contains—

Water .....	99.49 per cent.
Ptyalin .....	0.12 " "
Epithelium and mucin .....	0.13 " "
Fatty matters .....	0.11 " "
Salts .....	0.15 " "

Ptyalin, the active principle of saliva, is a ferment which has the power of converting starch into maltose and small quantities of dextrose. Intermediary between the starch and sugar are two products known as erythro-dextrin and achroö-dextrin. Starch is recognized by a deep blue color produced by a solution of iodine and potassium iodide in water. Erythro-dextrin gives a mahogany brown or violet color, and achroö-dextrin, maltose, or dextrose do not color the iodide solution at all. The composition of ptyalin is doubtful. Among the various salts of saliva is found potassium sulfocyanate, as may be shown by the addition of a drop of ferric chloride solution, which produces a deep red color, disappearing on the addition of mercuric chloride (difference from meconic acid).

The quantity secreted daily by a man varies considerably; estimates varying between thirteen ounces and three and a half pounds have been given; 500 to 800 grams is another estimate. Its alkalinity averages in man 0.08 per cent. expressed as sodium carbonate.

The constituents of saliva are—

<sup>1</sup>See DENTAL COSMOS for June, 1901, vol. xliii, p. 581.

Organic: (a) Mucin. Acetic acid precipitates this in a stringy form. (b) Ptyalin, an amylolytic ferment discovered by Leuchs in 1831. (c) Proteid: a trace of a proteid, coagulable by heat and of the nature of a globulin, is constantly present. (d) Sulfocyanid of potassium ( $KSCN$ ) is usually but not always present in human saliva.

*Inorganic:* Small quantities of chlorin and phosphoric acid in combination with potassium, sodium, calcium, and magnesium; also small quantities of sodium carbonate.

Sodium chlorid is the most abundant salt. Schönbein observed that saliva contains a substance which, like nitrous acid, colors blue a mixture of starch and potassium iodid.

According to Hammarsten, the cells of the submaxillary gland contain proteids, of which the most abundant is a nucleo-albumin; they also contain mucin, which passes into the saliva. The sublingual is similar. The parotid cells contain no mucin. A small amount of mucin is, however, obtainable from the investing connective tissue.

In myxedema the parotid cells, however, undergo mucoid degeneration. An extract of salivary glands exerts a similar diastatic power to that of saliva, as it contains ptyalin.

Hammersbacher found, in 1000 parts of the ash from human saliva, potash 457.2, soda 95.9, iron oxid 50.11, magnesia 1.55, sulfuric anhydrid ( $SO_3$ ) 63.8, phosphoric anhydrid ( $P_2O_5$ ) 188.48, and chlorin 183.52.

According to Erik Müller, who made extensive investigation of the salivary glands, saliva is formed from typical intracellular granules. He gives the following results of his investigation:

1. The saliva is a product of granules which undergo characteristic transformations.

2. The secretion is present in the gland-cells in the form of small round vacuoles, which are separated from the surrounding protoplasm by a wall which can be stained. These vacuoles were first demonstrated by Retzius in Golgi preparations and by the author in ordinary preparations.

3. These vacuoles are formed in granules in cells.

4. The cells have a different appearance, depending upon their richness in granules; some of them have large clear granules, separated from one another by a reticulum containing small granules that take the stain; other cells have large granules that can be stained.

5. During very active secretion the granules which can be stained become changed into secretory vacuoles.

6. The secretory capillaries of albuminous glands are all intracellular.

Chittenden and Richards, in a study on variations in the amylolytic power and chemical composition of human mixed saliva, give the following summary of some of their results:

"Human mixed saliva contains normally no sodium carbonate whatever; the alkalinity indicated by litmus, lacmoid, etc., is due to hydrogen alkali phosphate, with possibly some alkali bicarbonate.



Mixed saliva invariably reacts acid to phenol-phthalein. The alkalinity of mixed saliva as indicated by lacmoid is greater before breakfast than after the morning meal,—a conclusion which stands in direct opposition to the statement frequently made that the alkalinity (of mixed saliva) is least when fasting, as in the morning before breakfast, and reaches its maximum with the height of secretion during or immediately after eating. Saliva secreted after a period of glandular inactivity, as before breakfast, manifests greater amylolytic power than the secretion obtained after eating, as observed by Hofbauer. Corresponding with this increase in amylolytic power occurs an increase in the proportion of alkaline-reacting salts, but the increased amylolysis is due primarily to an increase in the amount of active enzyme contained in the saliva.

“Mixed saliva, whether collected by mechanical stimulation or collected without effort, shows a natural tendency to vary both in composition and in amylolytic power throughout the twenty-four hours, and apparently independent of the taking of food. Between 7.00 and 11.00 A.M., however, in the absence of food the secretion is remarkably constant.

“Mechanical stimulation, as chewing a tasteless substance, and alcohol, ether, gin, whiskey, etc., taken into the mouth, all lead to the outpouring of a secretion richer in alkaline-reacting salts and in amylolytic power than the secretion coming without stimulation.

“Mixed saliva resulting from stimulation with ether, alcohol, etc., contains a much larger proportion of mucin than the secretion coming without stimulation, being noticeably thick and viscid. This quality is not apparent in the saliva resulting from mechanical stimulation.”

Greenbaum investigated the effect of resistance to secretion upon the percentage of salts in saliva, and upon the work done by the gland, and concludes as follows: “In normal circumstances the percentage of salts in saliva varies with the rate of secretion, increasing as the rate increases and decreasing as the rate decreases.” In his experiments he found that when a decrease in the rate of secretion is effected by offering resistance to the flow of saliva, the percentage of salts in the saliva never decreases proportionately and may actually increase.

He states that the increase of percentage of salts cannot be attributed to a filtration through the walls of the ductules and ducts, since this process, even if it could affect the percentage of salts at all, would necessarily cause a greater increase in the percentage of organic substance. His experiments show that there is no necessary connection between the increase in the percentage of salts and the increase in the percentage of organic substance.

An experiment was made to determine approximately to what extent the viscosity varies with the percentage of organic solids. A number of specimens of saliva were collected and forced through a capillary tube under a pressure of 10 cm. Hg. Time and quantity were observed and comparison made with distilled water, the viscosity of which was taken as unity. The result was that the viscosity varied with the percentage of salts.

M. Cohen made investigation of the saliva, and reports the following results: He found many indicators useless in measuring the alkalinity because of the large amount of  $\text{CO}_2$  in the saliva. Methyl-orange proved to be the most satisfactory, and this gave reliable results. The average alkalinity of the saliva corresponded to a solution of sodium hydrate of a strength of 0.0154 per cent., although it varied considerably. Cohen is of the opinion that the figures given by earlier authors for the alkalinity have been too high. He found the alkalinity greatest in the morning when the stomach was empty; it decreased in the forenoon, increased again at noon and reached its highest point at this stage. It decreased again in the afternoon and increased toward the time of the evening meal. He never found the reaction acid in normal persons.

Cohen calls attention to the fact that the saliva has frequently been found acid in infants and in adults who are the subjects of diabetes or of diseases of the mouth, esophagus, or stomach. He observed no relation between the acidity of the stomach contents and the alkalinity of the saliva.

Cohen observed some instances of paralytic sialorrhea, also the saliva of patients who had received pilocarpin, and found an unusually high degree of alkalinity; the freezing-point of the saliva in these cases was somewhat more reduced than in normal cases.

Many experimenters have tried to cause absorption of blood exudates or of metabolism products in cases such as pleural effusion and in nephritis. Cohen likewise attempted it, but without definite results. He was unable to observe any marked change in the alkalinity or in the molecular concentration, though the amount of chlorids seemed to be increased. In two instances of chronic parenchymatous nephritis, however, he found the molecular concentration high, as indicated by the lowering of the freezing-point.

F. Kübel brings forth evidence which tends to upset the current doctrine that ptyalin acts best in a neutral or weakly alkaline medium. On the contrary, he finds that even the weakest alkaline reaction hinders it, while a weak acid reaction is highly favorable, especially when the acidity is due to some of the stronger acids, such as HCl. An amount of HCl equal to that in the gastric juice brings the activity of the ptyalin to an end.

According to Krüger, the thiocyanic acid is a constant and normal constituent of human saliva; it does not result from a partial decomposition of the saliva or from carious teeth. The saliva of smokers was found to contain two or three times as much of the acid as that of non-smokers. The quantity of saliva secreted in twenty-four hours (250 to 300 c. c.) was not markedly influenced by cigarette-smoking.

There is no doubt that there are some ingredients contained in saliva that may have influence on the general economy of the human system; if not from the acidity or alkalinity, it may be from a toxicity; as, per example, the experiments of Pignatti, Morano, and Baccarani, who tested the toxicity of saliva from healthy and diseased human beings on rabbits. They found that the saliva was toxic in doses of 20.738 c. c. per kilo of animal. The toxicity varied

with individuals within wide limits and seemed to have very little relation to health or disease. There was also no relation to be found between the toxicity and the specific gravity, the degree of alkalinity, or the quantity of ptyalin or mucin. The animals generally died in convulsions.

Again, other authors claim, on the contrary, that there is nothing in the ingredients of saliva that would be deleterious to the general health or to the oral organs. Sanarelli, for instance, states that, considering the frequent presence of pathogenic micro-organisms in the mouth, it is remarkable that primary lesions appear so rarely, and that wounds heal so kindly there; and sums up by saying that the saliva is an unfavorable medium for certain pathogenic bacteria, destroying them, when they are not too abundant, more or less rapidly, and so altering the type of others,—for example, the pneumo-bacillus,—as to render them harmless.

Hugenschmidt made investigation of the antiseptic properties of saliva in order to determine why mouth operations are seldom followed by infection. He found that ordinary micro-organisms grow rapidly in the saliva, but that, nevertheless, this fluid does have a tendency to keep down infection. Being alkaline, it thus prevents fermentation. It washes away considerable portions of food which tend to lodge on the mucous membrane and dilutes that which remains. Hugenschmidt maintains that saliva stimulates the diapedesis of the white blood-corpuscles in the lymphatics. Even normal saliva contains microbic products, and therefore, because of its attractive power toward microbes, favors phagocytic action, the phagocytosis being due to rapid migration of the leucocytes.

We have hereto fairly well reviewed the pathological physiology and the chemical action of saliva upon the economy of the human system, including the maxillary glands; but, now, what effect can the ingredients of the secretive oral organs have on cement?—or, in other words, what chemical changes take place when the ingredients of saliva are combined or connected with the ingredients of cement? We will therefore review the contents or the chemicals contained in cement.

The principal chemical constituents of cement I find are phosphoric acid, phosphate of alumina, nitric acid, phosphorus, sodium phosphate, zinc oxid, silicate of alumina, magnesium oxid, basic zinc oxid, zinc oxychlorid, zinc phosphate and zinc sulfate, arsenic, antimony, lithium phosphate, borax, boric acid, calcium pyrophosphate, cadmium sulfid, fluorhydric acid, sodium carbonate, powdered glass, silex, sodium borate, and magnesium nitrate.

I must confess that I am unable to see that there is anything in the combination of the constituent elements of saliva and cements that would be derogatory to each other, if no other element comes in contact with them. But there is an element that comes in contact with them that is a phenomenon to me and which I am unable to explain; that is, I observed that chemical changes take place during the various periods of female life. I find that the saliva of young girls, before they mature, is of lower specific gravity and varies from that in those who are menstruant; and that the saliva



in women who have passed menstrual life returns to the same nature as that found in young girls. From this it is evident that the organs of generation influence the circulatory organs, hence the saliva. Another observation which I have made, and which undoubtedly is not new, is the chemical changes that take place in the saliva while operating on the teeth. We find that the saliva changes its chemical constituents while the mouth is open. This possibly may be due to the atmospheric elements of the room or to exorbitant inhalation of carbonic acid gas.

Now to the point: If such morbid changes take place in the chemical constituents of the saliva, from whatever cause it may be, why cannot the same influence produce chemical changes in cement? Therefore it is my opinion that if any derogatory chemical influence takes place in cement, it is produced by the same action and the same cause as in saliva.

#### BIBLIOGRAPHY.

- SIMON'S "Manual of Chemistry."  
 MANDEL'S "Text-book of Physiological Chemistry."  
 HAMMARSTEN, *Zeit. Physiol. Chem.*, vol. xii.  
 HALLIBURTON'S "Text-book of Chemical Physiology and Pathology."  
 ERIK MÜLLER, *Arch. f. Anat. u. Entwicklungsgesch.* H. 5 u. 6, 1896.  
 CHITTENDEN and RICHARDS, *Amer. Journ. of Physiology*, 1898, vol. i.  
 GREENBAUM, *Journ. of Physiology*, 1898, vol. xxii.  
 COHEN, *Deut. med. Wochenschr.*, January 25 and February 1, 1900.  
 F. KÜBEL, *Pflüger's Archiv*, Bd. 76, 1899.  
 KRÜGER, *Zeit. f. Biol.*, Bd. 37, 1898.  
 PIGNATTI, MORANO and BACCARANI, *Soc. med. chir. di Modena*, April 19, 1899.  
 SANARELLI, *Centralbl. f. Bakter. u. Parasit.*, January 9, 1892.  
 HUGENSCHMIDT, *Ann. de l'Inst. Pasteur*, October 1896.

### NON-COHESIVE VERSUS COHESIVE GOLD FOR CERVICAL MARGINS.

BY WM. CRENSHAW, D.D.S., ATLANTA, GA.

(Read before the National Dental Association—Southern Branch, February 19, 1902.)

**D**URING the thirty years of my practice in dentistry the question of gold preparation and its adaptation to tooth-preservation has been one of special interest. Upon the discovery of the welding process of gold our profession was wont to believe that the acme of perfection had been reached, and that through this process we had conquered finally the march of the microbe in tooth-decay. But no greater disappointment has been realized within the time named.

The failure of cohesive gold at the cervical margin, to my mind, is inevitable, particularly if the margin be located in dentin or cementum.

The writer believes that in no small degree these failures are inaugurated at the time of making the filling, if malleting be done. We say this because, beneath the gold thus malleted down, the cementum, which is composed of nervous tissue and lime salts, must, it is reasonable to believe, have its structure crumbled

or disintegrated. If this result obtains, it is only a question of time when the failure will become known.

These failures the writer claims are practically universal, and come within the time the conditions prescribe, varying as these are favorable or otherwise.

In the light of the failures observed, the author has striven for years for perfect adaptation, by which he means perfect condensation of non-cohesive gold at the cervical margin,—believing that with this done the surest permanent preservation will have been secured, if not ultimate perfection reached. To do this a perfect adaptation of the matrix is a necessity. With this supplied, non-cohesive gold becomes easy of adaptation and adjustment to the surface against which it must go, and it becomes, under these conditions, practically a plastic filling material.

Fifteen years or so ago the writer read before this body,—the old "Southern,"—a paper, the object of which was to point out that a system was possible only with cohesive gold. By this he meant that everything that could be done with gold could be done with cohesive gold. It was this point more than that cohesive gold was superior to the non-cohesive as a tooth-preserver, he had in view. In the course of the paper it was stated that a matrix was a snare and a deception. That opinion is still held of such matrices as were then extant; they were then and are now a snare and deception.

After the reading of that paper, and making a clinic with cohesive gold and electric mallet, when the subject came up for discussion, the elder Dr. Morgan, whose opinion was held by the writer in high esteem, said that such practice as was there illustrated entitled the patient to damages in the courts, and I don't know if he did not say the operator ought to go to jail.

Nine out of ten dentists then present scouted the idea of placing cohesive before non-cohesive gold as a preserver of tooth-structure, and the writer escaped from Nashville between two suns. But with the matrix such as we now have, the contour of molars and bicuspidis may be restored in a manner more nearly perfect than has been possible heretofore, and with promise of greater protection against recurrent decay.

In using non-cohesive gold at the cervical margins in conjunction with the matrix and cavity management now offered, we do away with retaining pits and their evils and dangers. We do away with malleting directly upon the margin of unstable structure. We place on the *margin* a preparation of gold which, if not more compatible with its nature, is one which by test, in contact with dentin and cementum walls elsewhere, has longer and more surely preserved them intact.

We do away with the task of building with cohesive gold, against which in the perfected matrix we have a form giving the outline of the contour in the shape of a mold, which limits to a grain the amount of material and at the same time so confines the gold that the adaptation is rendered easy and certain.

Non-cohesive gold under these circumstances can be so per-

fectly condensed and settled in position that after being capped with the cohesive we have it so placed as to accomplish its greatest good; and the cohesive also where, with wall boundary of enamel, it is at its best.

Therefore, to sum up: (1) We have a perfect marginal adaptation of the material employed, and this may be either gold, amalgam, cement, tin, or gutta-percha, if the perfected matrix be used. (2) We abandon retaining pits. (3) We have the cavity simplified, so that we can place the material in rapidly and perfectly. (4) We get ample contour at the interdental space, and thus protect the gum festoon and maintain normal chewing surface. (5) We have cohesive gold where it serves best. (6) We save material, save time, save the patient and his money and ourselves.

---

## CLEFT PALATE CASE.

BY CARL B. MILLER, D.D.S., CEDAR FALLS, IOWA.

(Abstract of a paper read at the thirty-eighth annual meeting of the Iowa State Dental Society Clear Lake, Iowa, May 21, 1901.)

**I**T is a sense of duty, as well as of pleasure, which prompts me in reporting this case at this meeting. It differs from most cases of its kind in that the upper jaw was cleared of all teeth, thus making it necessary to insert a full upper denture, as well as a palatal mechanism, the cleft in the case extending through both the soft and hard palates. It will be my purpose as best I can to give you the details involved.

The patient, of Danish nationality and twenty-three years of age, presented herself to me July 31st of last year and wanted her upper teeth removed with the expressed wish of having a plate. Upon questioning her I found that while she knew her speech was defective, she did not know that her mouth was any different from that of anyone else, or at least that her defective speech was the result of having a condition so abnormal. Her desire was for new teeth, thinking nothing of the betterment of her speech, or that such a thing was possible.

Her teeth were nearly all decayed away and what few remained were lying in all directions, especially in the front of the mouth, due to the fissure of the cleft at this point. These I removed at this time.

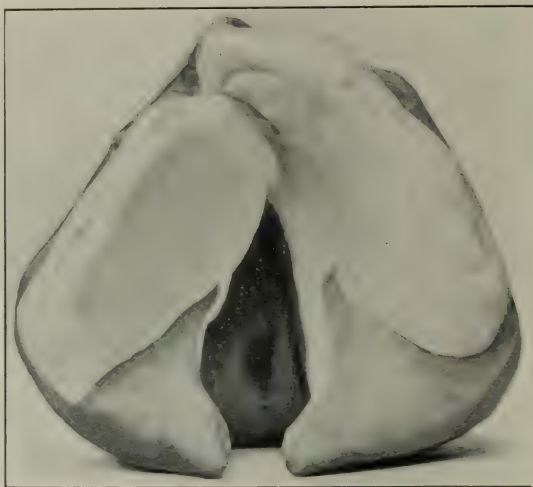
Dr. Ottolengui says, "No matter how valuable teeth may be to ordinary persons, they are doubly so to the cleft palate patient, who must depend upon them not alone for mastication, but also for speech, since they serve to retain the instrument which enables him to overcome his infirmity."

My patient's teeth were too far gone to be of service in such capacity, and besides, owing to the fact that she only thought of or cared about teeth, they would very likely not be needed to hold an appliance in place. So that the first thing to be done was to construct a plate and to make something to fit the opening if possible.



January 8th of this year, I took the impression as follows: I selected a tray suitable for the case as for an impression of a mouth under ordinary conditions. I mixed a small quantity of plaster pretty thick and carried it with a spatula up into the opening or cleft, beginning to fill in the front or narrowest portion, bridging over and back, and covering the upper sides of the uvula. This formed the dome or completed the roof of her mouth. After it had set sufficiently, I coated the plaster with oil and then filling the tray carried it into the mouth in the usual manner. Of course, in removing, the portion placed up in the fissure remained; this I moved backward with pliers, and when removed put it in place on the impression, and made my cast. The taking of the impression in this case was the most difficult as well as the most important part of the operation, the divided uvula and the adjacent soft tissues being so

FIG. 1.



easily moved that a correct impression of those parts was very hard to secure. However, from the cast I made a wax trial plate, and at the same time formed a piece of wax so that it filled or closed the opening and extended back and above the uvula on each side. I fastened this piece of wax to the wax trial plate and tried it in the mouth. Here I altered the shape of the wax to properly fit the opening, and at the same time made corresponding changes in the cast.

Up to this time I had in mind either to make a soft rubber velum or an obturator. Arguments in favor of each were considered. The fact that an obturator has proved very satisfactory in such cases and the conditions in this case being such that a rubber plate was to be made, led me to the idea of making a plate with a simple extension to fill the opening. This extension would necessarily be in the form of an obturator, but different from the obturators made or suggested by Dr. Ottolengui in that it would be of solid rubber instead of hollow.

Dr. Ottolengui says: "An obturator is an instrument designed to merely fill a gap or close an opening in the palate. To be of any service the instrument must be so constructed that it accomplishes all that the artificial velum does, even though in an entirely different manner. It must accurately fill the cleft when the parts are at rest. It must also fill the fissure whenever, and no matter how far, the movable sides of the cleft are drawn upward. To serve such a purpose the obturator must be so thick that when the sides of the palate are drawn upward to their greatest limit, they still rest against the sides of the obturator." "An obturator, unlike an artificial velum, is stationary in its position, but is of such form that the pharyngeal muscles of the throat in the movements incidental to the production of articulate sounds hug the obturator and so separate the cavity of the nose from the cavity of the mouth." "An obturator hinged to the plate does not add to its usefulness."

Having decided to make the plate with an extension to fill the opening, I first filled the opening in the model with plaster, so that

FIG. 2.



the finished plate would in the hard palate portion simply extend into the opening enough to lap the border and gain any advantage there might be in the lap to help secure the plate in place. Beginning with the soft palate, I made this extension, which I shall call an obturator, to extend farther into the opening and wider so that when the parts were at rest the two points of the divided uvula lay under and against the obturator. After filling in the cast here and trimming off there until its shape would produce something that would fit the case, I had little difficulty in setting up the teeth, waxing up the case, trying it in the mouth, and finally investing and vulcanizing; though the flasks were none too large to accommodate such work. A point to be observed is, that what has been done was done easily and required nothing but what we use in our everyday practice. I had hoped that I might have the patient here so that we might see what has been accomplished, but I could not prevail upon her to come. The cast will show with what I had to do. Owing to the flaring of the process on each side and the large maxillary tuberosities, it was not easy to carry the plate to

place, but with a little work it was successfully inserted. I advised the patient as to what she might expect and instructed her to return in a few days. At first she was troubled by food stopping against the plate or roof of her mouth in trying to swallow, but she soon adjusted herself to that, and has never had to have anything done to the plate since it was put in place.

Her speech is very much better, as she says she can make herself understood easily now, whereas before she had great difficulty in making her wants known.

It takes time for the patient to learn to talk with the appliance, as would be the case with any appliance; having always had such a deformity it is like learning to talk all over again. The treatment of the case could not be more simple, and yet the results are most gratifying, and I doubt very much whether something more elaborate would prove as satisfactory.

The removal of the teeth and the construction of a lower plate to articulate with the upper will soon be undertaken, when she will have a condition which, while not equal to what nature usually does, will be a vast improvement over what nature did for her.

---

## ADENOIDS.

BY W. R. WHITEIS, M.S., M.D., IOWA CITY, IOWA.

(Read at the thirty-eighth annual meeting of the Iowa State Dental Society, Clear Lake, Iowa, May 21, 1901.)

**T**HIS is pre-eminently an age of specialism. Never before in the world's history has there been so sharp a physiological "division of labor." In the days of our grandfathers, an attorney practiced law: now, we have lawyers who are specialists in corporation law; in criminal law; in the laws of matrimonial relation and divorce; in patent laws, etc.

In the field of medicine and surgery this tendency to specialization has gone forward at an astonishingly rapid pace. Some six years ago I saw painted on a shop-window in Leipzig the words, "Haarschneiden und Zahnausziehen," a phrase that means that the shopkeeper cuts hair and extracts teeth. Here in the very shadow of Germany's second largest educational institution was a quaint old sign that recalled to mind the time when the barber was both surgeon and dentist. Just across the way, within the walls of the proud old university, men were being taught to be specialists in otology, laryngology, ophthalmology, odontology, stomatology, dermatology, neurology, syphilology, and many other branches of medicine.

The dental surgeon, not satisfied to be a general practitioner, has divided his work so that now we have specialists in crown- and bridge-work, in porcelain work, plate-work, extraction, etc.

While there can be no doubt that concentration of thought and energy on particular lines of work has produced marvelous results, there are limitations beyond which specialization should not



go. I cannot help sympathizing with the old lady who visited her son in a metropolitan city. She was sent to the dentist to have her toothache cured, here she was referred to an aurist to have her ear examined, here she was in turn referred to a specialist to have her stomach examined. The old lady exclaimed to her son, "Is there not in the city of New York one good 'old-fashioned family physician'?"

Between the rhinologist and dentist there seems to be a neutral zone into which neither voluntarily goes. The dentist, a prince among specialists, is slow to invade fields hitherto not his. The rhinologist, because he is wanting in mechanical ingenuity, is frequently forced to call the dental surgeon to his aid. Thus it happens that there are a number of diseases that are sometimes treated by the dentist, sometimes by the rhinologist. On the other hand, it sometimes happens that there are diseases usually left entirely to the nasal surgeon which ought also to be treated by the dentist. The most important among this last class is adenoids.

Why a condition that may have such injurious and lasting effects on the patient, and a disease whose symptoms are obvious to even the most casual observer, should be allowed to run for months or years before a surgeon is consulted is inexplicable. Yet little blame can attach to the laity when we consider that this affection was little understood, or indeed scarcely known, by the profession a few decades ago.

In 1865, Lowenburg, under the title "granular pharyngitis," describes three cases of hypertrophic pharyngeal tonsils. Meyer, in 1868, was the first to give an accurate description of the rhinoscopic appearance of adenoid vegetations. Meyer was also the first surgeon to perform an operation for their removal.

This disease, which is usually an affection of young life, has little respect for age, sex, climatic conditions, or hygienic surroundings. It numbers among its victims kings and aristocrats, the humble and poor; the old and decrepit, the young and robust, the infant and feeble. None can be said to be sure of exemption. Though well marked and characteristic symptoms are constantly present, there are myriads of secondary symptoms any of which may be present. The following are among the important symptoms to be noted:

(1) A history of mouth-breathing that has lasted for months or years.

(2) The child holds the mouth open and has a stupid expression.

(3) Broken sleep, snoring, and headache in the morning.

(4) Nasal speech.

(5) If a young child, there is difficulty in learning to speak.

(6) Earache and poor hearing.

(7) Hoarseness and cough are common.

(8) Changes in nasal mucous membrane are generally present.

(9) Occasionally there is a history of hemoptysis and epistaxis.

(10) Exceptionally one sees deformities of the face and chest.

If one looks at the text-book of Wagner, which was published before adenoid vegetations were known, he will find that exactly

this same list of symptoms is described, but curiously enough they are said to be caused by the hypertrophy of the faucial tonsil. At first glance this seems to be a peculiar coincidence, but if one thinks that almost invariably hypertrophied tonsils are accompanied by hypertrophy of Luschka's gland, the mistake is explained. The fact that the symptoms on the part of the organs of sight, hearing, and speech belong more to the enlarged Luschka's gland than to hypertrophied tonsils has nothing to do with the disease *per se*, but is merely a mechanical effect, or possibly the result of an inflammation spreading from the pharyngeal tonsil to adjacent tissues. In fact, Bosworth, Pambrook, and many others consider the various hypertrophied lymphoid structures of the throat as the manifestations of one disease. According to these authorities one understands, by adenoids, hypertrophied tonsils or granular pharyngitis,—a disease of the lymphatic structures of the throat that is more pronounced in Luschka's gland, in the tonsil, or in the pharyngeal glands, as the case may be.

Let us turn for a moment to the structures and distribution of the lymphoid structures of the throat.

This tissue,—named by His “adenoid tissue,” by Fry “reticular connective tissue,” by Schmidt “follicular gland tissue,”—is composed of large branched connective-tissue cells and connective-tissue fibers holding in their meshes many small round cells or leucocytes. This kind of tissue is found in all mucous membranes, either as a diffuse or circumscribed mass. In the region under discussion we find large masses of adenoid tissue in the faucial tonsils, on the base of the tongue, and in Luschka's gland; filling the space between these is the diffuse adenoid tissue,—all forming what Waldeyer called the “pharyngeal ring.”

According to the investigations of Stohr, an enormous amount of leucocytes wander through the epithelial covering to become phagocytes or perhaps to protect the tissue by covering it with the products of degeneration of the cells. These statements, if true, explain why in acute infectious diseases we so often find these structures enlarged. It is easy to understand how an increased demand on these organs will be answered by an increased physiological activity and swelling of the tissues. This process long continued or often repeated must result in permanent hypertrophy. Higher degrees of this same process result in the cessation of function and ultimately in infiltration and caseation of the tissue.

It is also known that heredity plays an important rôle. Often one sees several children of the same family afflicted with lymphatic enlargements. In such cases it is usual to find that one or both of the parents have been subject to disease of the lymphatic system.

Poorly nourished children who live in dark, damp houses are said to be very favorable subjects for this disease.

For the physician an important question is to tell when these structures are normal, when physiologically enlarged, and when pathological. Under normal conditions one is not able to see any of these structures except the faucial tonsil. Macroscopic lymph-nodes on the posterior wall of the pharynx are always pathological.

It would seem that there should be no difficulty in deciding when the faucial tonsil is hypertrophied. But what one will call hypertrophied another will call normal, or perhaps well-developed. Henle gives 20-25 mm. as the maximum length, and 5-10 mm. as the maximum thickness of the tonsil. One often sees cuts said to be the natural size of the tonsil that are twice that size; in fact, normal tonsils are rarely found in the post-mortem room. In the adult, normal tonsils are almost as rare as normal nasal mucous membranes. Seifert says one must be guided by the appearance of the lymphatic structures.

The pharyngeal tonsil is also subject to great changes. Merkel says it is misleading to describe the surface, for no two preparations are alike. The numerous inflammatory processes that have affected it have so changed it that one will be astonished to note how often he finds retention cysts, scar tissue, and even new formations. If one would see normal pharyngeal tonsils he must examine these structures in children, and best in newly born children. Even here he must remember that pathological changes are often found. The normal pharyngeal tonsil is not to be seen at all, or if seen, is only a slight elevation. Bosworth says the structures described by Luschka and most other authors as tonsils are in reality pathological structures.

Perhaps the condition of the lymphatic structures of the throat is best determined by keeping in mind the statement of Prof. Chiari: "The lymphoid nodules are hypertrophied when they can be seen on the surface of the mucous membrane; the tonsils, when they appear as knolls or eminences which are plainly visible to the unaided eye." If we accept this rule, and examine carefully a patient afflicted with hypertrophied tonsils, in the great majority of cases we shall find all of the other lymph-structures pathological.

Often it will be difficult to say which of these structures is most affected. It is almost constant to find both the faucial and the pharyngeal tonsil enlarged. When the lingual tonsil is enlarged, seventy-five per cent. of the cases show also an enlargement of the lymph-nodules of the pharyngeal mucous membrane. In many cases, where one finds the structures of the pharyngeal ring enlarged he will also find the deep lymphatics of the neck infiltrated.

Hypertrophies of the pharyngeal tonsil are of two kinds: (1) A hemispherical hard mass that occupies the vault of the pharynx. Its color may vary from grayish to pink or even red. The surface of the tumor is not traversed by bloodvessels, and closely resembles a hypertrophied faucial tonsil. (2) The second variety of adenoids is the true adenoid vegetation. The tumor has a warty appearance. It hangs down so low that it can often be seen below the palate. It frequently covers the opening of the Eustachian tubes. Processes of the tumor often extend down into the nasal cavity as far as the lower third.

These tumors differ also in their ultimate structure. While one is composed of almost all fibers and few cells, the other form is composed of many cells and few fibers. The hard tumor is prone to undergo degeneration. The follicles become caseated or calci-



fied. The connective tissue thickens, and in the course of years the gland becomes sclerotic and shrunken. This is the process by which the adenoid tumors ultimately reach their normal size. Dr. Hopmann says this is not any more to be called a normal process than is the shrinking of an enlarged liver of scirrhus.

When the tonsil shrinks spontaneously, the disease may still be present even though it presents a different picture. After the symptoms due to pressure disappear, secondary symptoms due to the diseased tonsil itself are to be expected. Such changes are catarrhal inflammation and degeneration of the gland.

The symptoms of disease of the pharyngeal ring in children may all be referred to the faucial or pharyngeal tonsils, because the lingual tonsil is not developed before puberty. These symptoms are due to mechanical disturbance of function or to inflammatory changes in neighboring tissue.

The disturbances of the respiratory tract, together with the deformities of the chest, may be explained by the mechanical interference with nasal breathing. This same cause is accountable for the nasal tone and the difficulties in articulation, but I do not believe it can explain the actual stupidity of the child. The fact that the imperfect breathing often causes a deformity of the chest might lead one to ask what effect it must have on the circulatory system. Dr. Heindel, of Vienna, says that the brain and other tissues of the body are supplied with an imperfectly aerated blood, and as a consequence the child has a brain that is incapable of doing a normal amount of work. He offers as illustrations the facts that children are noticeably poor in their school work,—that they are unable to remember facts or to fix their attention.

It is well known that persons suffering from pulmonary tuberculosis often have enlarged pharyngeal tonsils. There has been much discussion as to whether the adenoids are caused by this disease, or whether they are merely a part of a general infection. One authority states that in fifty cases of pulmonary tuberculosis twenty-one had adenoids. Another investigator found one per cent. of his cases complicated by adenoids. From these figures it follows that adenoids and pulmonary tuberculosis do not necessarily bear the relation of cause and effect to each other. On the other hand, it is easy to understand how a tubercular tonsil might from its location become the source of infection for the lung. Or, supposing the lung to be the original source of infection, it is possible that the lymphatics offer the means of communication with the tonsil. I believe Dr. Heindel has stated the case correctly when he says we have here to do with a lung that is only imperfectly developed, and the adenoids compel mouth-breathing,—two conditions that are favorable to the development of pulmonary tuberculosis. Be the relation what it may, pulmonary tuberculosis is sometimes improved by the removal of adenoids.

The inflammatory process that extends from the adenoids to the surrounding mucous membrane has two causes: (1) The enlarged gland presses on the superficial veins and lymphatics, and so causes a congestion; (2) the enlarged follicles offer opportunity

for the lodgment of foreign substances and the subsequent inflammations. In the same way adenoids may lead to diseases of the Eustachian tube, middle ear, etc.

It must be kept in mind that the severity of the disturbance does not depend entirely upon the size of the tumor. The size of the pharynx and the nasal passages is an important factor. Tumors that cause no symptoms in a large pharynx may be large enough to completely close the respiratory passage of a child. It is the relative size of the adenoid as compared with the naso-pharyngeal space that determines the amount of disturbance.

Fortunately the tendency to the formation of malignant growths in the pharyngeal tonsil is not great, yet some cases have been reported. Non-malignant tumors other than adenoids are common. The fact that there is no definite time when the adenoids shrink sometimes makes the diagnosis doubtful.

Yet the determination of adenoids is easy. The mouth-breathing together with the peculiar facial expression are almost sufficient. One can be certain as to the kind and size of the tumor by the use of the rhinoscopic mirror, or still better by the feel of the tumor. The fact that this tumor is more common in young life almost excludes the mucous polyp. Fibrous tumors are distinguished by a greater blood-supply and the density of the growth. Malignant tumors are recognized by the rapid growth and rich blood-supply.

As Ingalls says, seventy-five per cent. of these tumors will atrophy by the twelfth or fourteenth year, but in the meantime irreparable injury may be done. If the adenoids have existed for a long time, it is probable that the speech will never be perfect. If the tumor is removed early, the recovery from the local inflammation is perfect. The treatment may be put in one phrase,—thorough and early removal.

If one has decided to operate, the questions *when* and *how* must be answered. There seems to be no limit as to when one may operate. I have seen Prof. Chiari operate on children from one to two years old. Astier reports a successful operation at the age of four months, and another at six weeks.

In the first operations for adenoids a ring knife was introduced through the nose. In 1871 Michel introduced the snare through the nose. Schrötter recommended burning with chromic acid. Other operators removed the growth with the finger. Gottstein's curette superseded all other methods until Stoerk introduced the cutting forceps. Prof. Chiari favors the removal by means of the snare introduced through the nose. For persons with large nasal cavities this is a rapid and almost bloodless operation. It has the advantage that no general anesthetic is required, and nothing but pathological tissue is removed.

The disadvantages of this operation are: It cannot be used in cases where the nasal passages are small; after the first part of the tumor is removed one can no longer see what he is doing. To work by feeling with a snare is a more difficult operation than to work with an instrument made to fit the cavity.

The cutting forceps in a skillful hand is an excellent instrument, but in inexperienced hands it is a clumsy and dangerous thing. Cases are recorded of injury to the septum, and even portions of the soft palate have been cut away.

For all conditions I believe some of the modifications of Gottstein's curette to be the best instrument. If one has first seen the tumor and then examined it with the finger, he is able to remove it with a minimum amount of danger to the surrounding structures. I wish to say that the use of the Gottstein curette as often directed,—namely, to make three cuts, one on each side of the median line and one in the middle, is both unsuccessful and needlessly harsh. In the hand of such a person as Tyson, of Albany, the curette is an instrument of the most exact precision. The whole question of what instrument is best can be answered by saying, The instrument to which one is accustomed.

Shall we use a local or a general anesthetic?

If one operate through the nose, a general anesthetic is not desirable; if one use a ring knife, an anesthetic is not necessary. In the Vienna clinics it is never used. When an anesthetic is used, chloroform is preferable. It is not desirable to push the chloroform to the stage of surgical anesthesia, but merely enough to render the patient unconscious.

As regards the position of the patient, Hauptmann in Cologne always operates while the patient is in a sitting position. If the chloroform be not pushed to full surgical anesthesia, there is no danger of the blood entering the lungs. The position is more convenient and there will be less bleeding.

---

## ESTHETICS IN OPERATIVE DENTISTRY.

BY CHARLES A. BLAND, D.D.S., CHARLOTTE, N. C.

(Read before the National Dental Association—Southern Branch, February 19, 1902.)

**M** ECHANICS and esthetics should go hand in hand in operative dentistry: what we are striving for is permanency and beauty. This rare combination in a filling material is yet to be discovered. The gold filling, when properly done, is from a mechanical standpoint by far the most permanent, but beauty is sacrificed for durability. However, when it becomes necessary to show gold at all, the cavity should be cut boldly to the front and the margins made to assume graceful curves; attempts at concealment which result in irregularity of margins proclaim artificiality more than when no effort is made to hide the gold. To place gold crowns in conspicuous places in the mouth is a violation of good taste and is condemned more by the profession than the laity. Dr. Hurd's anecdote, told at the Niagara meeting of the National, illustrates what our patients think of an unnecessary display of gold: A well-known New York dentist told a French lady, "I can insert a white filling, only gold is so much



more permanent." "Yes," she answered, "but over in France we had rather be temporarily beautiful than permanently ugly."

The highest art is to conceal art, but let us be sure it is concealed. Dr. N. S. Jenkins, of Dresden, Germany, has given to the profession a process of porcelain enamel inlays which gives promise of wonderful development, but it has yet to reach the position of superiority over other filling materials. The apparent difficulty in getting the proper color makes the filling more noticeable than if gold had been used. I have seen some porcelain fillings which looked as if the operator were color-blind. Of course the strength of the inlay is yet to be determined, as it is in the experimental stage. There is more to be considered than perfect selection of color, viz, the restoration of the shape of the teeth. Perfect contour work can be accomplished by the use of gold, when it is necessary to resort to extension for the prevention of recurrent caries. Gold so far seems to be the only filling material which meets all the requirements, but even gold has its limitations. Despite the dogma which asserts that any tooth in the mouth can be successfully filled with gold, there are teeth which can be saved with amalgam better; however, gold is without doubt and will continue to be the most satisfactory material, unless supplanted by the inlay. Can porcelain enamel be used with the same facility as gold? Can it be manipulated in all, or even a majority, of the cases which present themselves? Can it be placed on the grinding surface of teeth with the assurance that it will not fracture? If so, it is the ideal filling material.

In the early days of dentistry the saving of teeth was the only consideration, nothing was thought of the disfigurement occasioned by the removal of tooth-structure; no effort was made at restoration of form; but to-day esthetics plays an important part in operative dentistry. The mechanical part of all dental operations should be done with mathematical accuracy. After we have attained this degree of efficiency we can advance rapidly until we have achieved great success in the concealment of our patchwork. There seems to be a prevalent idea that science is antagonistic to common sense; there was never a greater mistake. Is it not common sense to make our work as near like nature as possible? The artist of consummate skill makes his pictures resemble nature so closely that we are lost in wonderment. Is this not common sense backed up by scientific knowledge? In our vocation we have, as a profession, become wonderfully skilled in the practical part and it is now time for us to study the relationship our work bears to other parts of the human anatomy.

Recent investigations have conclusively proved that some of the diseases peculiar to the oral cavity have more than local significance. It is now claimed that pyorrhea is not only intimately associated with other systemic disturbances, but is in reality their exciting cause. Thus science and hand-craft sustain each other. By our skill as mechanics we prevent the loss of dental organs, and our scientific knowledge enables us to see and appreciate the results of our work. Science helps us to continue our advancement

after all the possibilities of mechanics have been exhausted, and the contempt once had for the so-called theorists will give place to admiration of their splendid success in pointing the way to perfection in operative dentistry.

## NECROSIS OF THE MAXILLA.

BY DR. F. B. JAMES, WILTON JUNCTION, IOWA.

(Read at the thirty-eighth annual meeting of the Iowa State Dental Society, Clear Lake, Iowa, May 21, 1901.)

**N**ECROSIS and caries of the bones of the maxilla are conditions that we are frequently called upon to treat.

Cases where the alveolar process only is involved, resulting from the chronic inflammation of pulpless teeth, are the most common cases with which we have to deal, although we occasionally see cases where a too liberal use of arsenic has caused the loss of a considerable portion of the process and one or more teeth.

The difficult eruption of teeth, or an impacted tooth, frequently causes necrosis of a considerable portion of the jaw.

Necrosis resulting from mercurial and phosphorus poisoning, from syphilis, traumatisms, or the eruptive fevers is more frequently handled by the physician and surgeon.

In handling a case of necrosis no attempt should be made to remove the dead portions of bone until the sequestrum has separated from the healthy tissues. Good drainage should be obtained and the parts should be frequently and thoroughly washed out with a reliable antiseptic solution.

Hydrogen dioxid should be used with care unless there are good openings for the escape of the gas formed, otherwise it may happen that the periosteum will be torn from the healthy bone near by, thus enlarging the surface of the denuded area.

When the bone is carious all the affected part should be removed at once with the engine and burs, or with chisels and gouges. Every precaution should be used to keep the parts in a thoroughly antiseptic condition during the operation. The cavity in the bone should be packed with antiseptic gauze, which should be changed frequently, and will gradually fill up with new bone tissue providing the general health of the patient is good.

Patients who have necrosis or caries of the bone need tonics and bone-producing foods, plenty of fresh air, and moderate exercise.

Burchard mentions a case of necrosis of the jaw where the teeth were retained and new process was formed around the roots by the aid of sponge-grafting; and sponge has been used with good results when it was necessary to amputate part of the root of a tooth.

Senn and other surgeons of note use sponge and bone grafts when they have removed portions of a bone, and for the last few years Senn has used decalcified bone chips to fill in the cavity when he has removed portions of a bone; or in cases of trephining he fits the opening in the skull with a plug of decalcified bone.

In the spring of 1900 a physician brought a patient to me for

consultation. The patient, Mr. C., had been troubled for several months with a fistulous opening in the gum near the symphysis of the lower jaw where the mucous membrane of the gum is reflected back upon the lip. This opening was constantly discharging pus of a very offensive odor and taste, although the physician was washing it out every other day with hydrogen dioxid and other antiseptics.

Mr. C. had a perfect set of teeth, containing not a single cavity or filling, and none of the teeth were sensitive to percussion. A careful examination with the electric mouth-lamp showed that the lower left lateral was a trifle opaque, and I decided to open into it. I opened on the lingual side and when the pulp-chamber was reached I passed a smooth broach down the canal. It went down for an inch and three-quarters before touching bottom. A probe passed into the fistulous opening revealed a cavity in the bone about the size of a hickory nut. We enlarged the fistulous opening with a lancet and washed out the cavity thoroughly, introducing the syringe through the opening in the tooth. Considerable pus and several small pieces of dead bone were removed; the cavity was packed with antiseptic gauze and the opening in the tooth closed with temporary stopping. The cavity was washed out thoroughly every day and all the softened bone was removed with instruments and aromatic sulfuric acid. In about three weeks, as no more pus was forming, the canal of the tooth was filled with chloro-percha and a gutta-percha point and the treatment was continued through the opening in the gum. The cavity in the bone refused to fill with new tissue, although everything seemed to be in a good healthy condition and the patient was taking tonics. Five months after filling the canal of the tooth I curetted the cavity in the bone, and after washing out thoroughly packed with antiseptic decalcified bone chips. There was slight soreness and some swelling for several days, but since then there has been no trouble, and the cavity is now almost entirely obliterated, the gum being firm and healthy, and rounded out to nearly the original contour.

I used bone chips in another case last fall with very good results.

Miss R. presented herself with an upper right first molar with the following history: Two years before she had had the tooth treated and crowned in a neighboring town. It had been very sore at the time, but the dentist (a student practicing during vacation) had told her that the soreness would pass away in a short time. Instead of getting better it grew worse, and finally an opening formed in the gum, which had been discharging for almost two years, the tooth being so sore that it was impossible to chew on the right side of the mouth.

I removed the crown and root-canal fillings, which seemed to be all right, but found a small opening in the side of the palatal root near the bifurcation of the roots. I enlarged the opening and removed a piece of dried chloro-percha about the size of a pea which had been forced through the opening in the root. The surface of the cavity was scraped, all softened bone removed, and the space packed with decalcified bone chips. The opening in the root was closed with gutta-percha and the canals refilled. Two weeks later



the fistulous opening in the gum had healed, and now the patient is using her upper right molar with as much comfort as any other tooth in the mouth.

*Preparation of decalcified bone.* Select the compact layer of the fresh tibia or femur of the ox, remove all periosteum and medullary tissue, divide into longitudinal strips about one-eighth inch wide, and immerse in a relatively large quantity of 10 to 15 per cent. watery solution of hydrochloric acid, which must be renewed daily for from one to two weeks. Then wash thoroughly in a weak solution of caustic potash in water, cut into small chips, soak for forty-eight hours in 1 : 1000 mercuric bichlorid solution, remove and store in a saturated solution of iodoform in ether. When about to be used wrap in aseptic gauze, dissolve out the excess of ether and iodoform with alcohol, and put in a 1 : 2000 mercuric bichlorid solution until required, when careful drying with iodoform gauze should precede their implantation.

---

## DENTAL PROPHYLAXIS.

BY T. G. FERREBY, D.D.S., HUMBOLDT, IOWA.

(Abstract of a paper read at the thirty-eighth annual meeting of the Iowa State Dental Society, Clear Lake, Iowa, May 21, 1901.)

WE have not to go back far in the history of dentistry to the time when it was the larger part of the dentist's business to extract teeth; and I have no doubt that most of us have patients now who think that it is our only mission in life. About one year ago I had under my care a patient with a fractured maxilla. A lady patient who knew that such a person had been to see me said, "What did you do, pull all his teeth?" We all, I believe, resent that epithet of tooth-puller, in our own minds if not otherwise, whenever it is applied to us, and we do well to do so.

To one looking on, it is certainly marvelous to see the way in which broken-down teeth are restored to their former shape and contour. To restore a tooth to approximate its former usefulness after it is decayed and broken down is a mission we may all be well proud of; but to preserve that tooth in its natural state is certainly a higher mission, for nothing equals the natural teeth in utility and beauty.

As yet prophylactic dentistry receives little attention, and some of the reasons are evident. The dentist is anxious to make a living, and he who is making a living is anxious to make a better one. At present we see more money in the operative than the prophylactic side of our profession. In order to receive proper remuneration, it is necessary in most cases to do something, and to do something that is apparently hard work. We have not yet followed the example of our brothers in the law and displayed in our offices a

notice saying, "Professional advice charged for." So our patients expect to receive it for nothing, and I am afraid in many cases it is worth nothing.

To overcome this condition of affairs we must have conscientious dentists and more intelligent patients. Ignorance is causing a great deal of pain in this world, especially in the teeth. No one is happier than the parents when baby is erupting his first tooth, and from time to time for the next few months the attention of everybody is called to the fact that baby has teeth. His teeth are given attention; swollen gums and sleepless nights force them to visit the dentist,—more often the physician; the gums are lanced, soothing medicines are administered till the crisis is over, then all is serene and the child grows up as if he had no teeth, till about the age of six or seven, when some exposed pulp reminds him of the fact. The first attack of toothache in many cases proves a blessing to the individual, because it is at that time that professional advice is sought in regard to all the teeth. How many people there are in whose mouths, when you look into them, you see that one of the sixth-year molars is missing. It was an acute attack of pulpitis in this member that brought to mind the fact that they had teeth that needed attention. Perhaps up to that time they had no fear of extraction, but one siege caused them to give attention afterward, not so much because they prized the tooth, but that they had a horrid dread of the operation of removing it.

The masses have not been educated along this line. This branch of education has been sadly neglected. The physiologies in our schools and colleges say very little on the subject, and seldom can you find a student, unless he is making a specialty of it, that knows anything about the construction of the teeth or their eruption. The subject is not sufficiently brought before the people. You can scarcely pick up a paper nowadays and not see in glaring letters something like this, "How to Keep Good Health," "Preserve the Eyesight," etc. I do not say this is the ideal way of calling people's attention, but it has a tendency to prevent their becoming indifferent on the subject. It keeps the question before their minds, and when you get people to thinking they are likely to act.

The responsibility rests with the individual dentist. He must make himself an encyclopedia of knowledge, and be free to let it out to those who come into his office. As I said, it perhaps is an exposed pulp that brings to the mind of the patient that he must consult a dentist. Then it is that the dentist must make the most of his opportunity. Most of us do not care to talk on this subject outside of our offices. I hesitated when asked if I would give a lecture before a class in the high school, but concluded that it would be a good thing. The people should know the value of the teeth to the system, and that the loss of one impairs the work of that set of organs, and therefore the system must suffer; also that impaired function may cause loss of the teeth.

To prevent decay of the teeth we must know the causes of caries. I briefly alluded to impaired function. To have a healthy body every muscle and organ must do its share of work. If the teeth

are to do their share, every one must be in its proper place and have an antagonizing tooth to assist it. Then encourage the use of the teeth,—a more thorough mastication of the food, and the use of more food that needs mastication. The latter will serve a double purpose, giving the teeth more work and supplying the system with more of the constituents that go to make up tooth-structure.

Another cause is uncleanness. And that brings me to the hygiene of the mouth, which is a subject for treatment in itself. Take for consideration the surfaces that are habitually unclean; the interdental spaces, deep sulci, surfaces not smooth. Encourage the use of the toothpick, a quill preferred, or some hard wood, but discourage the use of the cheap soft wood. Explain the use of the brush; the difference between brushing and scrubbing; suggest the use of a dentifrice or mouth-wash such as is suited to the case. The use of floss silk passed between the teeth in addition to these will be found very helpful in cleansing the interdental spaces. In the deep sulci there is a source of great danger. Here the enamel is thin and often the union is incomplete. Their form encourages the lodging of food and bacteria-favoring substances. Now if these could be observed in time, drilled out and filled in so that the surfaces would be self-cleansing, the danger would be overcome. In the examination of the teeth let me urge the use of a fine exploring needle and magnifying glass. The surfaces that are rough and indented can be polished down and made smooth with good effect where we do not go through the enamel, and can also leave the surfaces so as to be self-cleansing. Otherwise drill and restore the contour surface with a filling.

Some teeth seem to resist all possible efforts, and their destruction is only a matter of time. The influences that have brought this about have been going on for generations, and to preserve them it would be necessary to commence back that far. Our only hope is to commence now with the intention of influencing the teeth of the future generations.

The nutrition of the teeth is of no less importance than the nutrition of the rest of the body. Knowing that food to supply the teeth with proper nourishment should be rich in mineral constituents, let us begin with the mother. If the food of the mother does not contain the elements that go to build up good tooth-structure during the period when the child depends on her for its nourishment, one may expect poor teeth as the result. More than this, there will be a drain on the nutrition of the mother's own teeth. So let her be furnished with food rich in mineral substances which tend to nourish teeth and make them able to resist destructive agencies.

In these days of fine bolted flour and other delicacies too numerous to mention, too much stress cannot be placed on the question of a healthy diet. In the grains, perhaps, are found most of these elements we are seeking,—especially in certain parts of them,—in the wheat as much if not more than any, but it is now the custom to discard the better part in order that white bread may grace our



tables. It is apparent that the liability of the teeth to decay depends largely, first, upon their original organization, and that the character of the organization depends upon the supply by the mother of the mineral constituents which ought to enter into their composition; second, upon the regular supply, especially in early life, of foods containing these constituents.

The people are not going to observe these things unless they are kept before their minds. It depends on us as servants of the communities in which we live to teach them the right way. It is the constant dripping of the water that wears away the stone; so the constant efforts of any individual will in some future time accomplish some good.

---

## LITTLE THINGS.

BY R. O. WILLIAMS, D.D.S., COUNCIL BLUFFS, IOWA.

(Abstract of a paper read at the thirty-eighth annual meeting of the Iowa State Dental Society, Clear Lake, Iowa, May 21, 1901.)

**I** HAVE chosen as a basis for a few thoughts a subject which I believe is practical, and to my mind not the least important of the many questions relative to our profession which are being discussed from time to time: "Little Things."

I shall try as briefly as possible to call attention to a few seemingly little things which if constantly kept in mind for a time will become habits,—and habits which during the course of a twenty-five years' practice will mean health to our bodies and money in our pockets.

As most of our life habits are formed while young, just so we as dental practitioners should at the very outset strive to form good habits of work.

It may seem a little thing to save your floor sweepings, disks, and strips. How many busy dentists to-day do it? I venture to say, very few. I wish those of you who have never tried it would have a receptacle of some kind in which to throw your disks, strips, and sweepings, and, say once a month, burn the contents. In one year you will be surprised at the results.

While operating, it may seem a little thing to adapt the chair in such a manner that we may do the work in hand with the greatest ease possible. To illustrate: Not long ago, while trying a bridge in the mouth previous to setting, it was necessary to grind down one of the abutments a little more, before the appliance would go down to place. Says the man, "Why don't you grind or make that thing to fit my teeth instead of grinding me to fit it?" Now that is just the idea I want to convey. We as a rule start all right, with everything adjusted properly for the operation in hand; but as we proceed it becomes necessary to work in a different position; and instead of lowering or raising the chair a trifle, as the case may be ("tilting the head-rest a little this way or that"), we just bend our backs or twist our bodies to suit the conditions, until we

are often found laboring at a disadvantage and in miserable positions; were we to stand in such positions away from the chair, our minds not centered on the work in hand, it would be indeed painful.

The treatment of persons who come to the office for something other than professional services is no small matter.

Now, when children come to you to have you do something for them for the first time, use tact. Sympathize with them; cause them as little discomfort and pain as possible. To you the work of extracting a tooth or filling one is a small matter; but to a child it is no small operation. She leaves your office only to meet some friends before going a block. "Look here!" "Oh, my! Who did that?" "Dr. Blank, down there in the Globe Building; and it didn't hurt a bit, either." At home she tells her story; and to the girls in the neighborhood with whom she plays. When she goes to school next morning she runs to her teacher. "Look here, Miss Webb!" "Well, you've got a tooth filled, haven't you? Who did that for you?" "Dr. Blank; and do you know it didn't hurt a bit!" She will talk about it for a week.

Supposing, on the other hand, the child had come to you, and a temporary tooth needs filling. You place her in the chair and without a word (for you are cross, things not having gone right during the day), take an excavator and begin lifting out the decay. "Ouch! ouch!" says the little girl. "Never mind, never mind, —that don't hurt!" In a short time the child bursts out crying, and with scarce any sympathy you finish the operation. When that child leaves your office, she talks just as much, tells just as many of her friends, but how different the story! I need not talk about the result; you can easily guess.

There are dozens of little things that one may do or not do in his everyday practice, which will help to build or tear down your reputation. Dr. Ottolengui says reputation is not skill, and of course that is true; yet without reputation we would have little use for skill.

Never take a patient into the operating room without cleaning up after the one you have just dismissed. That party does not realize that you have been awfully busy cleaning a set of teeth, and that it is hard to keep pumice from flying against the bracket table and other things close by, or that you have been extracting and that a bloody spittoon, if you haven't a fountain, cannot be helped. Take a few minutes and clean up; you will gain by it in the long run. Always have the best grade of linen napkins and towels, keeping them scrupulously clean; make your office as pleasant as possible; have flowers if you can; explain (when you have leisure) the intricacies of your electrical appliances, or your water motor, to intelligent patients. They will appreciate it.

I am aware that the young practitioner cannot have everything in the way of an outfit that he wants. He may know how to be modern, yet he has not the funds to put in the appliances, and must content himself with his college outfit for a while. But each and every one of us can look out for the little things; every little helps.

I went into a barber shop the other day, and while the barber was clipping my hair he said, "I am going to have an electrical hair-drier soon. I don't know that it will be any better than the old way, but it will attract attention, you know." Just so, by adding to your outfit (little by little, as you can) useful and labor-saving devices, by thoughtfully and carefully conducting your business from day to day, doing your best no matter how trifling the operation, your business will grow. Remember that the greatest men are not those who despise the day of small things, but those who improve them the most carefully.

Life is made up of small things. He who learns a science must master it fact by fact and principle after principle. Our business is built up through painstaking work to which is added little courtesies, little kindnesses, pleasant words, and genial smiles. One in a thousand once in a lifetime may perform a wonderful operation; but the little things that make up our practice come every day and every hour.

The nerve of a tooth not so large as the smallest cambric needle will sometimes drive a strong man to distraction. A mosquito can make an elephant absolutely mad. The universe is but an infinite attrition of particles. The grandest whole is resolvable to fractions; or, as the ditty has it, "Little drops of water and little grains of sand, Fill the mighty ocean and form the solid land."

---

## SUGGESTIVE THERAPEUTICS.

BY WESLEY D. MC CABE, D.D.S., CLEAR LAKE, IOWA.

(Abstract of a paper read at the thirty-eighth annual meeting of the Iowa State Dental Society, Clear Lake, Iowa, May 21, 1901.)

**T**HERAPEUTIC Suggestion, when stripped of the fraud and ignorance with which it has been surrounded, is destined to great prominence, and I believe will be found to be an important factor in the future history of medicine and dentistry.

Suggestive therapeutics has passed the experimental stage, and stands to-day as a demonstrated fact before the scientific world. The term more commonly applied to the alleviation of pain or the treatment of disease by the medical or dental profession, either for suggestion or post-hypnotic suggestion, is "therapeutic suggestion" or "suggestive therapeutics." *Therapeutic suggestion cures*, and not *hypnosis*,—hypnotism is but a means to an end. By it vices are corrected, pain is relieved, and disease cured.

It is high time that the public should understand more of the power of suggestion. Then will "Christian Science," "Divine Healing," "Divine Science," "Mental Science," and "Magnetic Healing" be divested of their mystery, and consequently relegated to their proper place in the minds of the people. That they have relieved thousands of people we do not wish to deny. How has this been done? Simply by suggestion. It has been correctly said that there is some truth in all of them, but what we want is the principle



by which they accomplish good, and to eliminate falsehood and superstition. This underlying truth or power for good is suggestion. By their various methods the mind of their convert becomes so in harmony with their teaching that confidence is established, or in other words a receptive condition is obtained, and though he be awake, he will readily accept the suggestion and profit thereby. The curative or destructive influence of mind over matter is no longer mere theory. By the proper suggestion, pain may be induced in a perfectly sound and healthy part of the human anatomy, and become as real to the subject as though severe injury had actually been inflicted, and on the other hand existing pain is no longer experienced. Surgical operations of all kinds are being performed in which the patient experiences no pain, and in which no drug is employed, suggested anesthesia being the only cause for such results. We all readily recognize some of the physical manifestations when certain influences are brought to bear on the mind. For instance, anger flushes the face; sorrow is followed by tears and depression; the sight of blood will cause some to reel and fall to the ground, and in many cases, on receiving news of the severe injury or death of a friend, persons have expired on the spot. On this same principle nervous diseases are very readily and satisfactorily cured by suggestion. Insomnia and consequently many of the terrible results following it; the liquor, morphin, cigarette, and various other habits, are amenable to therapeutic suggestion. I believe also that in the future great relief will be afforded by it in some forms of insanity. I simply mention the foregoing as illustrations. Therapeutic suggestion can be used beneficially in almost any case where drugs are employed. I do not advocate it as a system of its own, but as an auxiliary to the regular practice of medicine or dentistry.

I think that all practitioners of dentistry will agree with me, when I say that many of our patients suffer much mental agony before reaching the dental chair, and a still greater percentage suffer more mentally, or from fear, during the operation than from actual pain inflicted. We all understand and practice, to a greater or less degree, simple suggestion. The reason, however, that post-hypnotic suggestion is more powerful, is that the objective mind is in abeyance, and does not counteract by adverse auto-suggestion the suggestion given, making it possible for the person to accept unqualifiedly the statements made by the operator. There are people whose previous education and environment have been too material for them to accept suggestion in the ordinary waking state. They will not, or cannot, accept it or profit by it. They are inclined to doubt and question. In order to benefit this class, post-hypnotic suggestion is necessary. Under its influence their subjective minds will accept the suggestion without any hesitancy, or, in other words, without counter-suggestion by the objective mind.

The practice of suggestive therapeutics is as yet in its infancy, and must necessarily be very cautiously adopted by the practitioner, owing to the fact that anything preceded by the hypnotic state is commonly looked upon suspiciously, and in some instances super-

stitiously. Public education through professional men will lessen the abuse of hypnotism, and make it possible to use it whenever indicated. Let the dental profession, hand in hand with the medical profession, do its part in developing this science.

We should disabuse our minds of anything pertaining to the supernatural in this connection. Never be hypnotized except for sufficient cause, any more than you would be chloroformed. Both are, generally speaking, voluntarily received. A fool can be chloroformed, but the brighter the mind the better hypnosis can be induced. Hypnotists generally give the impression that they possess the power to subjugate the will of another, while in fact it is a blending, or harmonious working of psychic forces.

Hypnotism, being one of nature's forces, is perfectly natural, and therefore there are but few individuals not susceptible to its influence. The more normal the condition of mind and body the better the subject. It is as a rule almost impossible to hypnotize an insane person, an idiot, or a drunken man. Their power of concentration is weakened, or perhaps totally inactive. On the other hand, any individual of good intelligence and discrimination and some natural or acquired knowledge of temperament can, after proper instruction, become a practical hypnotist. The induction of hypnosis as employed by professional men is voluntary on the part of the patient, and may be induced by the suggestion of the operator, or by auto-suggestion. Taken outside of legitimate practice, the above might not hold true in the case of a person entirely ignorant of the subject. However, people generally break the influence without knowing how they did it, or what they avoided. Fright may cause concentration. Concentration is essential, and in effect it makes no difference how obtained.

A woman suddenly discovers a huge snake, and through fright her attention is fixed on the glistening eyes of the reptile until she is helpless and her body rigid and motionless. Her objective mind is now inoperative. Hypnotism is the key to the mind, and by its use as a therapeutic agent dental operations in many cases may be divested of the terror now ascribed thereto. Many patients, even when assured that by local anesthesia all physical pain will be obviated, will still insist that chloroform be administered. This illustrates that it is not altogether physical pain that is suffered. Previous to and during the majority of dental operations more psychic or mental suffering is endured than physical pain.

Take into consideration the good accomplished with electricity, chloroform, and dynamite; and yet these are used for criminal purposes. We do not denounce the things themselves, but enact laws restricting their use to qualified persons and for certain purposes only. We do not deprive a man of the use of his hands, but we do say "Thus far, and no farther."

I am firmly convinced that both the practice and teaching of hypnotism by irresponsible persons should be prohibited by law. Physicians and dentists are called upon to treat diseases, perform operations, relieve pain, and break up pernicious habits. Therefore to them should the right to teach and to practice it be granted.

## PROCEEDINGS OF SOCIETIES.

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

THE fifth annual meeting of the Southern Branch of the National Dental Association was held in the Kimball House ball-room, Atlanta, Ga., February 18, 19, 20, and 21, 1902, Dr. H. H. Johnson, Macon, Ga., presiding.

FIRST DAY—*Morning Session.*

The first session was called to order by the president at 10 o'clock Tuesday morning. The proceedings were opened with prayer by Rev. Dr. J. Orme Flynn, of Atlanta. Mayor Livingston Mims, on behalf of the city, gave the association a very cordial welcome to the city, and in appropriate words, characterized by his usual wit and eloquence, turned the keys of the city over to the association.

Dr. J. A. Chapple, on behalf of the Atlanta members, delivered an address of welcome to the society.

Dr. J. Y. Crawford, of Nashville, Tenn., responded to the addresses of welcome on behalf of the Southern Branch of the National Dental Association.

The remainder of the session was devoted to the transaction of the usual routine business, after which the meeting adjourned to meet at 2 o'clock in the afternoon.

*Afternoon Session.*

The meeting was called to order at 2.30 o'clock by the president. After the reading of the minutes of the previous session and hearing the report of Dr. V. E. Turner, chairman of the Executive Committee, the following names were submitted for membership: Drs. J. S. Betts, Greensboro, N. C.; J. M. Fleming, Raleigh, N. C.; John P. Carlyle, Greenville, N. C.; Wms. Donnally, Washington, D. C.; M. F. Finley, Washington, D. C.; D. M. Hall, Ala.; E. N. Passmore, Ala.

Dr. L. G. Noel, of Nashville, first vice-president, then took the chair, and the president read his annual address, an abstract of which follows:

## PRESIDENT'S ANNUAL ADDRESS.

After thanking the convention for the honor conferred upon him in his election as presiding officer the president recalled that in the city of Atlanta, thirty-three years ago, a small band of self-sacrificing professional men, realizing the advantages to be gained by organized force, gathered together to arrange plans for the creation of a Southern society, of which this is virtually a continuation, changed in name, not in character, but with its sphere of practical usefulness and influence greatly extended. He spoke with approval of the plan of organizing a great national society with several branches, which was carried into effect by the union of the American and Southern Dental Associations, at Old Point



Comfort, in 1897, and of the thriving character of the Southern Branch since that time, together with the importance of maintaining the general welfare of this branch and the National Association to which it holds allegiance, conditions which necessitate that the most cordial and friendly relationship should always be maintained between the two. He looked for the further development of the branches provided for at the time of the union referred to, so that in course of time the state and local societies under their jurisdiction will be brought into closer organic relationship with the central body.

The plan of a central organization with tributary branches met with his most cordial support. "There is a need for a great national organization composed of a somewhat select membership, and it is the duty of every member of the dental profession in the United States, laying aside all prejudice and selfishness, to heartily and sincerely support any movement or method, even at some sacrifice, which has for its object the advancement of any such noble cause."

He referred to the slow growth in membership of the Georgia State Society and the same conditions existing elsewhere, due to professional indifference upon the subject. He suggested as a remedial measure the appointment of a committee whose duty should be to keep in touch with the officers of state societies within the jurisdiction of the Southern Branch, and by personal attendance or by correspondence to urge the election of delegates and to secure a condensed report of the work done at the state meetings,—a report consisting of short abstracts of papers, with names and addresses of the authors, these abstracts to be condensed and shaped into a report to be presented to the Southern Branch at its next meeting thereafter.

He directed attention to the importance of aiding the committee of the National Dental Association in their efforts to prepare a suitable dental history, the needs of the Army Medical Museum for support by contribution of specimens, the importance of securing appointment of dentists for the care of the inmates of state asylums for the insane, and of the recognition of the importance of dentistry in connection with life insurance examinations.

The remainder of the address was concerned largely with the internal work of the organization and recommendations looking to the more efficient working of the association.

On motion of Dr. Foster a committee consisting of Drs. A. R. Melendy, Geo. S. Vann, and J. Hall Moore, was appointed to make subsequent report on the president's address.

The committee on Chemistry, Metallurgy, and Anatomy, Dr. J. P. Gray chairman, reported "No papers."

The committee on Operative Dentistry was then called, and Dr. J. J. Sarrazin, New Orleans, chairman, reported several papers to be read, and also a good many excerpts from the dental journals, and as these were very long, and there being several papers from

this committee, he suggested that they be read by title, and motion was carried to this effect.

Dr. Sarrazin announced that the first paper on operative dentistry would be from Dr. Bland.

Dr. CHAS. A. BLAND, Charlotte, N. C., then read his paper on "Esthetics in Operative Dentistry."\*

### *Discussion.*

Dr. A. R. MELENDY, Knoxville, Tenn. I think the paper is very timely. Our attention should be called to esthetics in operative dentistry. We are living in a busy age; we are living fast. We are inclined to sacrifice too much to lack of time, and fail to make our operations as beautiful as they might be. We fail to conceal gold for lack of time in obtaining separation. We are too anxious to save time to ourselves as well as to our patients. I do not think the essayist gives to porcelain inlay that credit which is its due. He seems to look upon it as in the experimental stage. I think it is a fact that porcelain inlay work has passed the experimental stage, and that, if placed where it is indicated, it is as permanent as any other filling material. With all the filling materials we use, their usefulness is limited. Porcelain inlays are limited to the front teeth, and possibly to a limited number of positions on these teeth. Where it is indicated, it is just as permanent as any filling material.

As to the general points laid down in the paper, I think we all agree. Let us take more time than we have done in the past to obtain separation, conceal our work, and thus add to the beauty of our patients' mouths.

One point occurred to me, not mentioned by the essayist, and that is the matter of bleaching teeth. We should take more time in bleaching those teeth that are in conspicuous places, for a discolored tooth is quite as objectionable and unsightly as a large patch of gold.

Dr. J. P. CORLEY, Greensboro, Ala. I most heartily commend the essay both as to its subject-matter and to its arrangement. I am especially pleased with the paper in that it clearly indicates lines which we may follow and develop. Some points mentioned are of particular value in practice.

In reference to the first suggestion,—permanency coupled with esthetics,—we certainly have to stick to gold as a rule. The suggestion of graceful curves is a good one. Unless we are very careful in the preparation of these cavities, we will cut off enamel that might be very useful. It is wonderful what a frail wall of enamel can be conserved by proper manipulation. If we will take time and get sufficient separation, we will have to cut very little of the labial enamel. I do not criticize the essayist at all, but we might fall into this habit.

In regard to the matter of gold crowns in conspicuous places, it has been a mystery to me how any man, styling himself a dentist, could place in the mouth of a human being a gold crown where it is unavoidably conspicuous. There may be cases where it is

---

\*Printed in full at page 580 of the current issue of the DENTAL COSMOS.

permissible, but they are extremely rare, and I trust I will never have such a case to deal with.

In regard to porcelain inlays. We have enamel experts with us, and I cannot say much about that subject; I may, however, answer some questions of the essayist. Are they valuable in all cases? No, there are many cases where they are not only not valuable, but not even desirable. A paper by Dr. Evans in the *Cosmos* for January, 1902, presents very clearly the localities in the mouth where enamel inlays are indicated, and they are very rare indeed. It is like the cowboy's pistol,—when we need it, we need it bad. There certainly are wonderful possibilities along this line, but I will leave this to the experts who are with us.

I am very much pleased with gold inlay in conspicuous places. You can use 20-karat gold solder and get a better color scheme than where you use gold foil. When covered with the natural secretions of the mouth they are agreeably harmonious. You can get beautiful contour simply by the flowing of the solder. You can usually get sufficient space to enable you to introduce them into approximal surfaces of the anterior teeth. I have had very good success and some beautiful results from this class of work.

In regard to the use of porcelain inlays on grinding surfaces, I would prefer the gold inlay. Several methods of making these gold inlays have been described in our journals, and I would most heartily recommend them to your consideration.

In regard to amalgam (if Dr. Crawford is not in the house), I agree with the essayist. You would deprive the public of three-fourths of the valuable service which the dentist renders if he were deprived of the use of amalgam. This does not refer to Nashville, but I say in the rank and file of the dental profession amalgam is a godsend to the public, and, if you deprive the dentist of the use of amalgam the public would lose the most valuable service which is now secured to them through operative dentistry.

Dr. JULES J. SARRAZIN, New Orleans. I thank the essayist very much for his timely paper, but I do not agree with him in regard to inlay work being in its experimental stage. As to placing margins hidden from view as much as possible, both prophylaxis and the position of the enamel rods,—opening like the blades of a fan, with short rods between them,—constantly compel our reaching tooth-portions exposed to view to insure ultimate success.

In regard to metal inlays, I fail to see their advantage over foil from an esthetic standpoint. We have three different shades of gold-platinum foil, which we may adapt to the temperamental appearances of our patients. Do not understand me as condemning gold inlays; I think them most excellent. We have cases where gold inlays can be used to a great advantage, and are very valuable. We can use metal inlays almost wherever cement can be used. We can get the same restoration as with gold foil and add very much indeed to the duration of the filling over what we get from cement. By the use of retentive dovetails, metal inlays need not depend upon cement adhesion for strength.

Dr. L. G. NOEL, Nashville, Tenn. I want to emphasize the state-



ments made by Drs. Melendy and Corley in discussing this subject, with regard to taking time to obtain good separation. In the remarks I am going to make, I wish to confine myself to the anterior teeth, because the paper could be applied mostly to the visible teeth,—the six anterior teeth above and those below, possibly including the bicuspid. When a patient applies to us for filling cavities in these teeth, very often it is a question as to how we shall approach the case. We have a choice in the matter, and those operators that are the great advocates of cohesive gold are disposed to take the short cut, and will approach the case from the labial surface, and cut away valuable enamel. When we cut away the labial plate we almost always cut away too much in order to get free access to the cavity. It may do for porcelain inlays, but it is very questionable whether it is good practice. Not being an expert in porcelain work, I leave this for those skilled in that art for decision. I want to emphasize a question I brought before you at the last meeting. I would urge the approaching of these cavities from the lingual surface. The labial plate of enamel is much stronger than the lingual plate. In mesial cavities, where decay is progressing from the lingual to the labial plate, the lingual plate is very much weaker. If we cut away the lingual plate we give ourselves much room for the insertion of gold. If we do not cut the lingual plate away, when we let these teeth come back together we have a crumbling of that most thin plate of enamel, and have to do our work over again, probably having to cut off the tooth and put on a crown. I would like to urge upon the profession at this time the importance of paring away the lingual enamel, and approaching the case from the lingual surface, as described by Dr. Robert Arthur years ago. In this way we get a much more perfect operation, and leave no short rods of enamel to crumble away.

Clinical observation shows that the manipulation of the non-cohesive foil as outlined above makes much better operations, and lasts longer, than cohesive foils.

Dr. T. W. BROPHY, Chicago. I think I am especially fortunate in being with you to-day to listen to the addresses that have been delivered. The last subject presented for our consideration is one that every practicing dentist should be especially interested in. It outlines a course of treatment that enables the skillful operator to more successfully imitate nature than by any other method. I think we all have noticed that sometimes the effect of some of our most trying, difficult, and tedious operations,—those that are being made at the expenditure of much energy on our part, as well as on the part of the patient,—although they are really beautiful, fall short of imitating nature. Now, with the advent of porcelain, we are able to so successfully imitate nature that only those who are skilled in this work will notice that anything has been done. Large conspicuous gold fillings in the teeth disfigure the mouth, and anything we are able to do in imitating nature should be welcomed with delight on the part of our patients as well as ourselves.

I have no desire to comment upon the crown-work being done. Crowns are a great help to us; they enable us to preserve teeth

that otherwise would have been lost. With our knowledge of porcelain work developed, the necessity of placing gold in any of the teeth anterior to the molars is in many cases removed. Dr. Jenkins, of Dresden, Germany, has done a great work in the developing of this material. I know him quite intimately, and his work is a credit to himself as well as to the profession. Our uses of porcelain are, to a great extent, limited. He goes beyond the steps we take, and restores great sections of teeth. He is removing one of the most objectionable features of our practice by placing porcelain so as to approximate nature.

Dr. A. O. HUNT, Omaha. The particular feature of the paper that interested me more than any other part was the question of inlays. The experience the profession has gone through in this class of work has been very peculiar. At best, I think it is at present in the experimental stage. The greatest difficulty in the use of these materials is that they are not of sufficient density; they are more or less porous. Most of us like gold better than porcelain inlays. In the last few years the manufacturers have given us a material that they claim is of the same texture as the artificial teeth. The results from the use of this are beyond anything we have ever had in gold, from the esthetic standpoint, in preserving teeth that are well organized. We all know the difficulties we have to contend with in placing fillings in young mouths. With almost every material we use, the teeth disintegrate more or less. My experience with cements has demonstrated the fact that only a limited amount of disintegration and decay occur where they are used, but they wash away and have to be constantly replaced. Porcelain inlays are particularly adapted to this class of patients. We have the benefit of the cement's lying against the tooth-structure, and there is very little disintegration and breaking-down occurring between the porcelain and the tooth-structure itself. This porcelain gives a material that will stand any condition that may exist, and seems of great advantage in placing this class of fillings in young teeth. We get the same results with metal inlays in posterior cavities. This kind of operating will give us as good results as any other operation. They are of especial advantage from an esthetic standpoint. The profession in general has not yet adopted these methods of preserving this class of teeth, but it is moving in that direction, and it will become more and more practiced by the profession, and with satisfactory results. It is one of the things as to which we shall feel, in ten years from now, that we will be absolutely helpless without the use of it.

Dr. J. Y. CRAWFORD. I noticed that Dr. Corley refers to metal inlays as being especially good practice in large molar teeth. I am an advocate of inlay work, and would advocate porcelain inlays if I felt that it would ever be of any special consequence to the profession. I have thought of this from time to time, but I do not believe the dentist will ever succeed in baking that character of porcelain that we can rely upon. I believe there are some that will produce good results, but it will never be used as extensively as the various other filling materials in filling cavities of the teeth.

Dr. BLAND. In closing the discussion, I wish to say that my main object in presenting this paper was to bring out some points I was not familiar with myself. I know very little about porcelain inlay work, and wanted to know what has been done in this direction, and what is most suitable for this class of work. There is great benefit derived from the color of porcelain, but is its durability what it should be?

The subject was passed, and the meeting adjourned until 8.30 P.M.

### *Evening Session.*

The regular business session for Tuesday night was dispensed with, and Dr. T. W. Brophy, of Chicago, entertained the association with a very interesting and instructive lecture on operations for the closure of cleft palate, hare-lip, etc., illustrated by the projecting lantern. (Dr. Brophy's lecture appeared in the DENTAL COSMOS for April, 1901, under the head of "Surgical Treatment of Palatal Defects.")

### SECOND DAY.

The morning hours of the second and third days were devoted to the following clinics:

Dr. J. A. CHAPPLE, of Atlanta, showed a very ingenious instrument, of his own invention, for the checking of the secretions from Stenson's duct during an operation. He demonstrated its practical use by applying it in the mouth of the patient. The instrument consists of a wire spring clamp, flat at the beaks. When applied in the mouth, one beak comes on the outside of the cheek and the other beak extends over the opening of the duct inside the mouth. Bibulous paper is placed between the beak of the instrument and the opening of the duct. Dr. Chapple claims this to be of great help to him in short operations, such as plastic fillings, keeping abutments for bridges dry, etc.

Dr. W. D. WELLS, Macon, Ga., gave a very interesting and instructive table clinic, illustrating the practical working of the Parker Shot Swager in swaging metal plates, etc.

Dr. W. T. MARTIN, Yazoo City, Miss., exhibited his intra-alveolar forceps for the extraction of roots of teeth. The beaks of his forceps are so shaped as to readily cut and press outward the alveolus as they are pressed down on the root.

Dr. H. H. JOHNSON, Macon, Ga., demonstrated a method of making porcelain-faced crowns that would give the strength of the Richmond crown without the necessity of having a band showing in front. His method of procedure is to make a band to fit the lingual half of the root, then fit the disk of gold to the end of the root, as with a Morrison crown, solder the half band to the disk, solder in the pin, and proceed the same as with the Richmond crown.

Dr. Johnson also demonstrated his method of getting an accurate articulation for gold crowns, and also a new method of soldering or filling the cusp. He first fits the band; then solders a cap of thin pure gold over the top, and cuts a hole in the center of this; then takes the bite, stamps the cusp, and tacks the cusp



to the band. Next he places on the tooth, and lets the patient bite into the cusp to verify the articulation, and then fills the cusp through the hole made in the cap.

Dr. JOHN R. BEACH, of Clarksville, Tenn., exhibited a swaging machine for backing up porcelain facings in crown- and bridge-work. The instrument is made from two pieces of brass tubing about three-quarters inch in diameter, with guide-pins on the upper half and grooves in the lower, to guide the two pieces in coming together when swaging. Both halves are filled nearly flush with modeling compound, allowing about enough space between them for a facing. The gold is cut the size to fit the facing, holes are punched, and then placed on the facing; this is then placed in the swager, and the two halves brought together by a blow on the upper half, and the gold is adapted perfectly to the facing.

Dr. W. G. MASON, Tampa, Fla., demonstrated a method of his own devising for making all-gold crowns for the anterior teeth. His method is to select a natural tooth, the size and shape of the one to be crowned, invest it in plaster so as to expose one half, then pour plaster over the other half, separate the plaster, leaving the tooth in one half, pour Melotte's metal over this half, remove tooth to the other half of investment and pour Melotte's metal over this half; then stamp the two halves of the crown, and proceed as with the Hollingsworth system.

Dr. R. B. ADAIR, Atlanta, Ga., exhibited diseased skulls, showing the different phases of Riggs's disease, also his new instruments for operating upon this lesion. The surgical treatment was performed on one of the skulls exactly as he does it in the living subject, illustrating a method of amputating any root of the posterior teeth and diseased bone in extreme cases. Dr. Adair produced several patients, upon whom he had operated several years ago, showing the success and permanence of his work.

Dr. L. G. NOEL, Nashville, Tenn., gave a clinic showing his method of filling approximal cavities in bicuspid with semi-cohesive gold.

Dr. J. Y. CRAWFORD, Nashville, Tenn., demonstrated his method of making gold inlays in the mouth of the patient.

Dr. C. L. ALEXANDER, Charlotte, N. C., presented a patient in whose mouth he exhibited a number of cast metal fillings made according to his method.

The clinic of Dr. ROBERT GOOD, of Chicago, included the treatment of two upper central incisors for pyorrhea. He first washes out the pockets well with sterilized warm water, and, after injecting a 12 per cent. solution of cocain into the pockets, proceeds to clean the deposits from the teeth with Dr. Younger's pyorrhea instruments. After cleaning off all the deposits, he floods the pockets with C. P. lactic acid, warmed. This, he claims, will destroy the diseased tissue in the pockets and start healthy granulations, bringing about a union between the hard and soft parts. An idea of the thoroughness of Dr. Good's work is gotten from the fact that he devoted five hours to the treatment of two incisor teeth. On the handles of the instruments that he uses he has vulcanite bulbs

about half an inch in diameter, which enable him to handle the instruments without cramping the ends of the fingers and interfering with the sense of touch.

Dr. SAM RAMBO, Marietta, Ga., demonstrated a method of filling large cavities with a combination of amalgam and cement by the use of the matrix.

Dr. W. MITCHELL, London, Eng., had on exhibition some beautiful specimens of porcelain bridge-work, also some teeth he had stained to suit special cases. He advocates the use of gutta-percha in setting crowns and bridges. He claims it to be much better than cement for this work.

Dr. WM. CRENSHAW, Atlanta, Ga., filled two approximal bicuspid cavities, extending under the gum, with soft gold, finishing with cohesive gold, assisted by the use of his matrix, which is especially adapted to this class of fillings.

Dr. V. WALTER GILBERT, Philadelphia, had a very beautiful display of specimens of the different classes of porcelain work. Dr. Gilbert also gave some very interesting and instructive demonstrations in the baking of inlays and crowns, and also in staining teeth.

Dr. J. S. THOMPSON, Atlanta, Ga., gave a table clinic illustrating his method of preventing sensitiveness to thermal changes in newly filled cavities, by lining the cavity with asbestos paper saturated with a solution of gum cassia and eucalyptus.

Dr. WALKER G. BROWN, Atlanta, Ga., had on exhibition some nice specimens of his inlay fillings, made according to his method.

#### *Afternoon Session.*

The afternoon session was largely devoted to the transaction of routine business.

The committee on the President's Address was called on to report, and the chairman, Dr. A. R. Melendy, of Baltimore, Md., submitted the following report:

#### REPORT OF COMMITTEE ON PRESIDENT'S ADDRESS.

First. We emphasize and indorse the sentiment that the most cordial relationship should always be maintained between the parent or National Association, and the Southern Branch.

Second. We most heartily favor any movement that tends to a closer relationship between this association and the state and local societies in this jurisdiction, and would recommend that a committee of three be appointed on State Societies, as suggested, whose duties shall be to keep in mind the time of meeting of state societies, and either by correspondence or personal attendance to urge the election of delegates to this society.

Third. We urge the importance of keeping in mind the opportunity afforded us by the Dental Section of the Army Medical Museum at Washington, of making such contributions of specimens and models as would be of interest.

Fourth. We believe that the influence of this society should be given to aid in securing the appointment of dentists on the medical staff in each state lunatic asylum.

Fifth. We hope the committees appointed on Dental History and Insurance Examinations will make full reports at this meeting, as we consider these subjects of vital importance to the dental profession.

Sixth. We regard as timely the reference made to our code of ethics, and recommend a more rigid enforcement of its laws.

Seventh. In regard to change suggested in Article III Section 3, last clause, it is the sense of this committee that the wording of the constitution is correct, having reference to delegates who are permanent members and are in arrears for dues to this association.

Eighth. We concur with the president in his recommendation that Article VIII Section 6 be so changed that the president-elect shall have authority to appoint the chairman of the Clinic Committee.

Ninth. We indorse the recommendation in regard to publication of standing resolutions and rules.

Tenth. We also indorse the adoption of the same rule in regard to the election of the higher officers as is now in force in the National Association.

Eleventh. In regard to error in the election of Dr. W. K. Slater to serve upon the Executive Committee, inasmuch as he is not present and your committee has not been apprised of his application for permanent membership, we would recommend the election of a member to fill the vacancy.

Twelfth. We most heartily commend our president for the faithful and efficient manner in which he has discharged the duties pertaining to the office within the short time allotted him.

Respectfully submitted,

A. R. MELENDY, *Chairman*,  
GEO. S. VANN,  
J. HALL MOORE,  
*Committee.*

After some discussion of the individual sections of the report, it was finally adopted as a whole.

Dr. J. Y. CRAWFORD, Nashville. I have a few things to say about Dr. Brophy's very interesting lecture of last night. He suggested some very interesting technical features with regard to the operation for closing cleft palates, hare-lips, etc. There is a great deal to be learned from the study of this work from Dr. Brophy's standpoint. It is of especial interest to us from the standpoint of the unfortunate sufferers who are born with these defects, making the appreciation of Dr. Brophy's work all the more marked. It is of special importance in that it saves human life. There is no operation in surgery in which the beneficial results are more marked than in this. The fact that it is capable of preserving human life commends it to us. When children are born into the world with complete cleft of the hard and soft palates, not being able to partake of the food provided by nature, their physical and mental faculties cannot be properly developed, and an operation that will obviate this disadvantage, and place the child on equal footing with those born without any abnormality, is, I say, of vital importance to the profession and to humanity.

Dr. S. W. FOSTER, Atlanta. I have one or two questions I would like to ask Dr. Brophy with regard to his operation for the closing of a cleft. Where it is necessary to perform two operations for the closing of the cleft, how long after drawing the maxillary bones together would you wait to perform the second operation for closing the soft parts? And further, in running these sutures through the maxillary bone, how long do they have to remain?

Dr. BROPHY. It is not always necessary to make a division at the malar process. It is done only in such cases as would make it impossible to bring the parts into proximity without this. In the event of having a broad cleft in the palate, we make these incisions in order to bring the parts into contact. Pressure upon the



sides of the bones will serve the purpose of bringing the jaws into contact. These wires are adjusted and the parts kept in contact by pressure for about five or six weeks, sometimes longer. I remember one case where the wires remained in three months. When the patient returned, the parts were firmly knitted with no special detriment to the tissue. No marked inflammation followed, nor any breaking down of the tissue. I have never seen a case of the breaking down of the hard parts from such pressure. The bone tissue ordinarily requires six weeks to reunite. After the bone tissue is thoroughly adapted, we allow it to remain two months at the shortest. The plates are removed by raising the plates from the tissues, clipping the wire, and removing one plate, and then the other, together with the wires passing through the tissues. Some six months should pass before the soft palate is operated upon. After we have the pre-maxillary bones brought back into position, we then operate upon the soft palate.

Dr. FOSTER. With regard to passing the sutures through the plates, do you have the wires passing through the pre-maxillary bones four different times, and do you have two loops,—one at each end of the lead plates?

Dr. BROPHY. If the fissure is wide we have four sutures passing through. The technique should be clearly understood before attempting this operation. Use strong needles, carrying strong silk sutures through the tissues at the median line, having the silver sutures attached to this silk suture in order to carry it through the plates. The needles are not used to carry the silver suture through the plates. The stiffness of the wire makes it difficult to carry it with the needle. The silk, however, is pliable, and may be carried through the tissues with no difficulty, and, when we get the silk sutures through, the wire sutures are easily carried through the plates, and the parts are brought into proximity by pressure—simply twisting the silver wires together. We do not divide the bone through the entire length at the malar process. It is only divided about half way. When this has been divided, we find that the tissues will stretch something similar to the bending of a green stick. With pressure the two sides may be brought into proximity.

Dr. BLAND. What effect does this operation have on the voice?

Dr. BROPHY. In all the cases that I have seen there is no difficulty with the voice as compared with the voice of others. The articulation is usually very good.

Dr. CRAWFORD. In older patients, how long do you let the sutures remain?

Dr. BROPHY. The silk sutures are removed in about a week, except in certain cases, in which I may leave them nine or ten days. Usually the coaptation sutures are removed in a week. The lead plates and silver sutures are allowed to remain two weeks, sometimes longer. After having the parts well united it is better to let them remain a little longer, so that the parts may become strong, and to prevent any foreign substance from being forced through. I remember in one case that I operated upon with good results, after I removed the coaptation sutures and lead plates, and dis-

missed my patient, the family had a reception at the Palmer House to rejoice over the result of the operation upon the child. During the evening the child forced something through the tissues, opening the cleft again. I was sent for immediately, and had to perform three operations before succeeding in closing it the second time. This simply illustrates the value of allowing the parts to grow together and reunite firmly. The question was raised in New York last winter about putting something in to keep the patient from forcing any foreign substance through the tissues after the operation. It was suggested that a rubber denture be made and placed in the mouth as a protection to the parts. I have never used such a protection, and do not think it necessary.

Dr. CHASE, Ocala. How many cases prove failures?

Dr. BROPHY. In the address that was delivered at Paris, which was distributed to you last night by Dr. Chapple, I reported 211 cases, and out of that number two deaths occurred, which I did not attribute to the operations but to conditions that followed two weeks later. Unfortunately, the second patient I operated upon died. The patient had not only a double hare-lip and cleft palate, but the fontanels were involved. In both these cases meningitis resulted almost simultaneously, and we could not save them. It seemed to be more from external conditions than from any other.

On motion the subject was then passed, and Dr. L. G. NOEL, of Nashville, Tenn., read his paper entitled "An Alveolar Abscess with Opening upon the Outside of the Face, Caused by Death of the Pulp in a Third Molar Independent of Caries."\*

### *Discussion.*

Dr. T. P. HINMAN, Atlanta. In opening the discussion of this paper, I beg to say that I do not think it has advanced any special theoretical point. It simply shows the great importance of the dental surgeon in diagnosing these conditions. I believe, if the patient had submitted himself to the dentist, there never would have been an opening on the outside of the face. We very often see cases of this kind. The case seems more one of maltreatment on the part of the physician than anything else. If the dental surgeon had been consulted, the opening could have been made just as readily on the inside of the mouth as on the outside.

With regard to the theory that the nerve became involved through conditions outside of the tooth, we cannot find any other theory that would cover the case. It is a case that simply emphasizes the importance of the dental surgeon in this particular class of work.

Dr. M. F. FINLEY, Washington, D. C. I desire to bring out a few points in regard to the knowledge of the general surgeon as to the proper treatment of the oral cavity. I have seen two or three instances where surgeons of much repute had lanced simple dental abscesses on the outside of the face, instead of raising the lip and cutting inside the mouth, as any dentist would have done.

---

\*Printed at page 562 of the current issue of the DENTAL COSMOS.

I had a case lately of a young lady patient, who was taken with a spell of sickness and had an extensive swelling on the right side of the face below the ear at the angle of the jaw. The family physician being out of town, I was sent for to see if the swelling was in any way connected with the teeth, I having made a treatment a day or two before in a lower first molar on that side. I examined the case, and decided the instant the mouth was opened that it was not caused by the teeth. There was much swelling and soreness at the angle of the jaw, but none about the teeth. She was wearing a poultice when I arrived; this I removed immediately, and directed simply that she wear a soft flannel cloth to keep in the body heat, as she said she felt more comfortable when the face was warm. I diagnosed the case as one of unilateral mumps, and advised treatment accordingly. My diagnosis was confirmed by the family physician on his return to the city.

Dr. J. Y. CRAWFORD, Nashville. I had the opportunity of being consulted in the case reported. I am much interested with the report and with the management of the case, but rather incline to dissent from the gentleman with regard to its appearance. I am inclined to think that the tooth had not the appearance of a perfectly sound tooth; also that the devitalized condition was due to conditions outside the tooth. In but very few cases have I seen the pulp of a tooth become involved as the result of outward conditions. I have seen it from exposure of the roots of teeth. I have seen edema of the glottis caused from conditions existing in the tissues around the teeth. I was especially interested in the report of the case, and I advised the same thing that Dr. Noel did, which was to extract the tooth.

In many cases of this character, where there is inflammation and swelling around the teeth, caused from external conditions, and especially in cases of the third molars, where they are trying to erupt, and causing irritation to the parts, we had better keep the knife out of them. We had better resort to propping the mouth open. Disarticulate the teeth by the use of an old crown you have lying around in the laboratory; put it on one of the teeth, and relieve the pressure from the parts surrounding the tooth. We can very often get good results from this practice, often saving the teeth without the necessity of an operation.

Dr. R. C. YOUNG, Anniston, Ala. These lower third molars are something to be dreaded. I once extracted a third molar, administering cocain to anesthetize the parts, and afterward it resulted seriously by developing a case of edema. I had a very hard time treating it. I thought that after that I would not use cocain in the extraction of teeth.

Another case, fresh in my mind: A man came to me a few weeks ago, a subject of tuberculosis, looking as though he were in the second stage, suffering extremely with his jaw. On examining the case I found all the teeth in good condition, with an impacted lower third molar, and I decided that this tooth was giving the trouble. I tried to put him off; I did not want to attack the case; but I could not get rid of it. I sent for a physician to



assist me in administering chloroform. I found the third molar pointing toward the second molar. The patient insisted on my extracting the tooth. The physician administered chloroform. I then got my elevator,—these are the best instruments for extracting third molar teeth,—extracted the tooth, and the patient came through very nicely. We had some trouble in getting him under the influence of the anesthetic. In the afternoon his wife came down to my office and said her husband could not swallow. I gave her a prescription of lead-water and laudanum to foment the jaw with, and in three hours after fomenting the parts well with this prescription, the patient was taking raw oysters.

Some days ago a young lady came into my office suffering extremely with a lower third molar that was trying to erupt. I thought of Dr. Crawford right away. He told me to disarticulate these teeth. I disarticulated them as he told me several years ago. When these third molars are being erupted, do not lance the tissues, simply disarticulate the teeth, and with a wisp of cotton wrapped around a dressing-probe, saturated with pyrozone, wipe out the pocket around the tooth. In like manner follow with trichloroacetic acid, full strength, and thus rid the parts of this colony of pus-forming bacteria, streptococcus pyogenes albus, etc., but do not break the continuity of the soft tissues, and thus give entrance to greater infection. If the inflammation is excessive, foment with lead-water and laudanum.

On motion of Dr. T. P. HINMAN, Dr. W. Mitchell, of London, Eng., was elected an honorary member of the association.

Meeting adjourned until 8.30 P.M.

(To be continued.)

## NEW YORK ODONTOLOGICAL SOCIETY.

THE New York Odontological Society celebrated its thirty-fifth anniversary on the afternoon and evening of January 21, 1902, at the New York Academy of Medicine, 17 West Forty-third street, New York city.

### *Afternoon Meeting.*

The president, Dr. Hodson, occupied the chair.

Dr. J. E. HINKINS, of Chicago, presented a paper. Prior to reading it Dr. Hinkins made the following remarks: "This is one of the special privileges of my life. About four years ago I came East to attend the meeting of this society, and I felt lost. Last year it was my fortune to give you some work done with celluloid cement for loose teeth. I have been somewhat of a chemical crank, as most of you know. When I was across the water, I read a paper on the disintegration of cements and their chemical action. [See DENTAL COSMOS for June, 1901, vol. xliii, page 581.] In the work I have done in salivary analysis, trying to get the different temperaments as we meet them in practice, I have gone over a great deal of dental as well as chemical literature, and in experimenting with the different cements I found I could not prepare the paper I

originally intended to read, so the title of my paper is "What Chemical Influence has Saliva on Cement?"\*

*Discussion.*

Dr. HEAD, Philadelphia. The subject of Dr. Hinkins' paper is of great value to the profession, and while the paper, as presented, would not seem to be as yet of any *practical* value, it certainly points in a direction that must ultimately lead to good results. He has simply pointed out certain difficulties which lie before the investigator when he tries to find out what is the real, fundamental cause of the disintegration of cement. He has not spoken of the presence of the lactic acid in the mouth, or of ammonia, or of acetic acid, which up to this time have been considered important causes of cement disintegration. Whether that was intentionally left out, or whether he failed to speak of it because it had been dwelt on so much before, I am unable to say. The question of cement disintegration is one of vital interest to the entire profession, for the very moment we have a cement that will not disintegrate in the mouth, that will bear the attrition of mastication, that moment will the gold filling for all practical purposes disappear,—for the gold filling, with all its beauty, with all the authority of age, is after all a great hardship for any patient who has its process of construction inflicted upon him. It is a crude method at best, this hammering in of gold on sensitive dentin and on a cementum and periodontal membrane that already may be taxed by the process of separation. Therefore this subject that has been presented, if it only suggests in the slightest degree a means of finding a cement that will be permanent, is of inestimable value, and I congratulate Dr. Hinkins upon his paper. I would also like to say that there is a new cement which some people have looked on with favor, and others with a great deal of disfavor. It is the Archite cement, and is supposed *not* to be formed of zinc oxid and phosphoric acid, as the principal basis of the combination. This gives some slight chance of permanency. I have used it with my inlay work, and, from the translucency of its substance after it is set, found it to give a better color to the inlay than any I have used up to the present time. It is, with careful manipulation, capable of excellent results. We have thought that the lactic acid, the ammonia, and the acetic acid were the principal agents of cement deterioration, and since this new Archite cement has been claimed by apparently competent authority to withstand the action of lactic acid, acetic acid, and ammonia, there is a possibility that we have really succeeded in getting a permanent cement.

Dr. BUTLER, Cleveland. The subject presented by the paper is one, of course, in which we all have great interest. I watched the reading of it pretty carefully, and while there were many scientific points brought out, showing that the paper was based on a good deal of very careful research, I must say that it was a little disappointing. However much skill we may possess at the present time, or which has been displayed in years past, we have not a

---

\*Printed in full at page 564 of the current issue of the DENTAL COSMOS.

typical substance for the repair or arrest of the disintegrating process carried on in the teeth. Every gold filling, or filling of any kind, put into a tooth is a foreign patch; and furthermore, it is simply a matter of time how long that non-vital patch will be tolerated. The man or men who shall develop some substance to put into the teeth that will be more compatible with the tooth-substance will confer a greater blessing upon humanity than all the dentistry that has been done up to the present time.

Dr. FINLEY, Washington, D. C. I do not feel able to discuss this paper. I think the gentlemen who have preceded me have pretty well gone over the points. I can say with Dr. Butler that I was a little disappointed in not getting anything definite from the paper. Of course, it shows a great deal of work and careful study; but the point has not been reached that we are enabled to make practical use of what has been brought to us. I hope that the time may not be very far off when some substance will be discovered that will make connection over this break.

Dr. S. G. PERRY. Just a word of congratulation to Dr. Hinkins upon his labor, and to our profession in having the results laid before it in this way. Gentlemen, a great deal of reading has been necessary in the preparation of this paper, and I appreciate it. Dr. Arthur said, when oxyphosphate first came, that we must expect a great deal from it. If I remember rightly, his son was a professor in a college at that time, and had done something in the way of developing the material, and Dr. Arthur, I remember, said in a somewhat prophetic way: "Some day,—it may not be in my day,—something will be found that will be more compatible with the teeth and more in keeping with their structure than gold, and it looks very much as if this would come nearest to it." It is not asking or expecting too much to look for a new material. It is not as startling as wireless telegraphy, and nothing at all compared to the laying of the Atlantic cable, or the progress made in telegraphy. Twenty-five years ago we would not have dreamed of the progress made in such matters.

Before I give up the ghost, I want to see something used for filling teeth that will be as permanent as gold and far more permanent than oxyphosphate. I have watched this new material of which Dr. Head spoke. I have used it, and it seems promising, but we must not forget that only a long test in the mouth can determine its real value. We will strike something some day that will be like the rising of the sun. These young men will not have to wear their lives out as we older men have done. As a profession we have not been studying this question of plastics as we should have done. It will have to be studied in the laboratory, and more earnestly than heretofore, before we get that ideal material; but it will be found one of these days, and then the incompatibility of gold will be no more talked of, nor will the appearance of gold be the shock to the community that it is to-day. I have the greatest satisfaction and delight in noting the gradual disappearance of these gold fillings and gold caps, partly brought about by the greater use of porcelain instead of gold. Some day the gold filling will go the same way, and I want to live long enough to see it.



Dr. JARVIE. I was unfortunate enough to come in too late to hear the paper, so that you will excuse me from saying anything about the paper itself, but I would like to refer to what two of the speakers have said in their remarks upon it. Dr. Butler and Dr. Perry laid especial stress upon the incompatibility of the materials used for filling teeth, saying we ought to have something much more compatible with the tooth-structure than anything we have at present, leaving the inference that recurrence of caries about a well-constructed filling was due to the incompatibility of the filling material with the tooth-structure rather than to any other cause. While I think the compatibility of the filling material is an important factor, I do not think it is of the importance given to it this afternoon. For instance, I saw the other day a second molar that had a very large filling on the mesial surface which had been put in by Dr. Dwinelle, when the gentleman was twenty years of age. That was forty years ago. The perfectly sound tooth had remained intact in the mouth only eight years; the gold inserted in the cavity of decay has remained and preserved that tooth for forty years. It is not so much a question of the compatibility of materials that are being used to-day. The materials we have, if used in their proper places,—gold, amalgam, tin, gutta-percha, and oxyphosphate,—are fairly compatible, if used as I say, in their proper places; but we must change the conditions which brought about the original decay, and if we can change those conditions, and fill the cavities perfectly with materials we have now, there will be comparatively little recurrence of decay. I have to combat with my patients the idea that a tooth filled once ought to last forever. I tell them that the mesial, distal, labial, and lingual surfaces of teeth as usually erupted are intact, and yet in the course of time decay occurs in these surfaces. The cavities may be filled as perfectly as human skill will permit, yet there is a joint where the filling material and the tooth-structure come together, and no joint is as perfect as an unbroken surface; if the original surface yielded to the influences of decay it is quite possible for decay to recur, unless, as I said before, the environment is so changed that former conditions predisposing to decay no longer exist. It is on changed local conditions largely that we must rely for non-recurrence of caries.

Dr. PERRY. I agree entirely with Dr. Jarvie's objections to what I said. The use of the word "compatible" is an unfortunate use, and I do not think Dr. Butler used it quite in the sense that Dr. Jarvie said. It might have been better if I had said "suitableness," both to the patient and to the operator; not objecting to gold because it is gold,—because it remains to-day the best material we have, of course.

Dr. JARVIE. I knew both of the gentlemen would agree to what I said; but the way in which it was said might impress people with the idea that it was the incompatibility of the materials we had to-day that permitted a recurrence of decay.

Dr. HINKINS. I must say that I am somewhat chagrined at the turn of the discussion. This paper was prepared with the view

that this is a progressive age. If you expect anyone to come before you and tell you what is the ideal cement to use in all cases, you are wrong. You must be familiar with the changes in different people. You can make a salivary analysis of a person to-day, and have them come in to-morrow and it will be as different as if it were three or four different people. I am trying to do something to enlighten the dental profession on the subject of cement. I have had to review the literature so I can begin at the bottom and work up. I do not care to present a mechanical paper here and not know anything about the foundation. There comes a storm, and the foundation is washed out; that is the trouble with our cements to-day. They are not prepared on a scientific basis. I prepared this paper to bring out a discussion so that it would help me and the gentlemen who work with me to do something to obtain better results. I believe the dissolution of cement fillings is due almost entirely to the acids in the saliva. I have analyzed a number of salivas, and almost in every one I get a percentage of organic acids equal to  $\frac{1}{8}$  or  $\frac{1}{20}$  of deci-normal sodium hydrate solution.

Dr. DAILEY. Do you find much free hydrophosphoric acid in the cement?

Dr. HINKINS. I do.

Dr. HEAD. What are those acids?

Dr. HINKINS. Lactic, acetic, butyric, formic, hydrofluoric, valerianic, and carbonic. I find, in every saliva I analyze, an excess of acetic and lactic acid. I have never found ammonia in any saliva to the extent of  $\frac{1}{75}$  or  $\frac{1}{85}$  of one per cent.

Dr. HEAD. Does that not go off quickly?

Dr. HINKINS. Yes, and that is the difficulty we have; it volatilizes very quickly. There are so many conditions. Only recently Professor Loeb has almost revolutionized the entire work by his investigations which he presented before the American Academy of Science. He says: "The energy of foodstuffs, and the motions of the heart are not, after all, due to the production of heat, but to the chemical energy in electrically charged molecules." And again, he put it this way: "A part of the chemical energy of foodstuffs is transformed into electrical energy, which, in turn, gives energy to the muscles and organs of the body."

It is almost an accepted fact that heat is not the essential of life, but the action between electricity and chemistry, and when you take these conditions in the mouth, and see the action on the foodstuff and on the molecules, and the ionization that takes place there, we have a problem that I do not know anything about although I have studied it earnestly for eight or ten years! That is why I read the paper to-day,—to bring out some discussion whereby from practical experience and observation the gentlemen who are working with me in this line might be able to get some light to go ahead and eventually get a cement that is compatible with the tooth-substance and will make a better filling. I do not think Dr. Butler understood the title of my paper, and while I like to "scrap" as well as any man on earth, I will not say any more.

Dr. HEAD. The scientific value of Dr. Hinkins' paper is un-

questioned. It is a very deep subject, and he has certainly touched on some phases that will be in the future of inestimable value, but we should remember that while the chemical or electrical action of the bacteria and the molecules may cause in itself a disintegration of the cement, the acids mentioned by him and others do have an absolute chemical effect on the life of the cement, and therefore, while we may in the future meet outside and extraordinary causes of cement disintegration, we now have in plain view the fact that the formic, acetic, butyric, and other acids will attack cement when it is present, and that ammonia in strong solutions will also attack it. We must remember that ammonia may not be analyzed in the mouth, because it volatilizes so quickly, but ammonia gases, like some others, in nascent condition are much more powerful than when stored away, and a slight fermentation may from this extra power affect the cement in a way that we otherwise would hardly deem possible from the small quantities that can be collected at one time. We may have larger problems in the future, but the first thing now is to get a cement that will not be affected by these acids. Any cement up to this time formed of zinc oxid seems unable to withstand those conditions, and any cement not made of zinc oxid, and which by tests in the laboratory will stand lactic acid and concentrated ammonia, would seem to have a chance of success, and while the Archite may disintegrate in the mouth, and probably will, nevertheless, so long as the tests of the manufacturer say it will stand the various acids and the ammonia, I hope the gentlemen present will give this cement a thorough test, because the great test after all is, Will it last in the mouth?

Dr. HART moved a vote of thanks to the essayist, which was unanimously carried.

Adjourned to 8 o'clock P.M.

#### CLINICS AND DEMONSTRATIONS.

At the afternoon meeting, which was largely attended, considerable interest was taken in the various clinics and demonstrations.

Dr. ROBERT GOOD, Chicago, presented a case of pyorrhea alveolaris under treatment, showing the beneficial results he had obtained. Dr. Good also demonstrated his methods of operative procedure.

Dr. JOSEPH HEAD, Philadelphia, gave a clinic demonstrating his method of bleaching stains in the enamel by the application of heated pyrozone.

Dr. G. W. SWARTZ, Chicago, demonstrated by an exhibition of models his method of constructing porcelain bridge-work, the novel feature of which consisted in forming and enclosing the V-shaped surfaces of the bridge or dummy teeth on the palatal side with pieces of platinum plate joined together extending in a continuous piece across the bridge from one abutment to the other, leaving the occluding surface of the porcelain exposed. The object is to give to the bridge section strength to resist the force of occlusion in which porcelain bridge-work is found deficient, except in cases when the force is light or the occlusion is quite an open one.



Dr. S. G. PERRY exhibited his electric lamp with its mountings for illuminating the oral cavity, together with his newly applied method of cooling the sheet of the reflector by a continuous flow of water so applied as not to interfere with the use or detract from the appearance of the lamp.

Dr. W. E. GRISWOLD exhibited his spring and stud spring attachments for supporting plates or removable bridge-work. Dr. Griswold by the use of models explained in a concise and explicit manner the progressive steps in the process of their application in the construction of the different styles of dentures to which they are applicable. Besides specimens he exhibited two practical cases.

Dr. TIMME, Berlin, Germany, exhibited an electric furnace for baking porcelain work. The muffle of this furnace is formed of sectional slabs of fire-clay. These slabs are pierced through the center lengthwise from one side to the other with small holes, and the fine platinum wire that communicates the heat is simply passed through the holes. The advantage claimed is that if at any time the wire is broken or fused it can be easily renewed.

Dr. PERCY RUSSELL exhibited an improved electric annealing slab.

Dr. GEO. EVANS exhibited specimens of a series of bakings of porcelains for inlay work made from the Jenkins and Ash's both high and low fusing, the Whiteley, and The S. S. White Dental Mfg. Co.'s porcelain body. The specimens consisted of samples of the first, second, and third fusings of each preparation of porcelain in small matrices of the same size. The specimens clearly demonstrated the fact that the greatest proportion of shrinkage took place in the low-fusing, and the least in high-fusing, which was that of The S. S. White Dental Mfg. Co.

---

## ANNUAL CONVENTION OF THE SIXTH, SEVENTH, AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE STATE OF NEW YORK.

(Continued from page 374.)

### THIRD DAY—*Morning Session* (continued).

A PAPER was then read by Dr. A. C. McALPINE, Warren, Pa., of which we give the following abstract, entitled

#### THE ETHICAL RELATION OF DENTIST TO PATIENT.

The essayist particularly dwelt upon the abnormal conditions usually existing in the professional relations between the dentist and his patients, growing out of the fact that the latter present themselves for treatment almost invariably under depressing influences caused by physical suffering or mental dread of dental operations, and that the morbid states of the mind and body respectively react one upon the other, producing mental states in which the ethical or psychological attitudes of the patient's mind are likely to be expressed in abnormal directions.

It was this condition of affairs which the essayist deemed to be of special importance for the dentist to recognize in order that he might deal intelligently and skillfully with the problems of relationship arising under the conditions noted.

The ordinary social and ethical conditions forming the subjects of study during the college course, and which engage the attention of the young practitioner, seldom include the department of psychology, to which the essayist desired to direct attention. He said we give little attention to the vital connection between the morbid states of the mind and body of the patient and the anticipation of the operation, which causes it all, except so far as to devise means by tonic and sedative medication to get from under its worst effect. Furthermore, we give no attention to the potent influence which the depressed condition of the patient exerts over us and others about him. He referred to the common experience of dental operators, who have suffered from the depressing effects of the nervous condition of particular patients who, after having lain awake nights in dread of operations to come, present themselves for treatment with shattered nerves,—with minds and bodies unfortified for any operation.

He called attention to the efforts which all had made at times, at the beginning of an operation upon a nervous patient, to gather together nerve force and determination, that by its power should dominate the patient and bring him to a state of quietude and confidence such as alone would put him in a proper mood for obtaining the best results.

Viewing the conditions from the standpoint of the physiologist, he recalled the fact that during depressing emotions the respiration is slower, circulation more languid, and every bodily function less vigorous. Fright kills. Anger in the mother poisons the milk for the nursing babe. Morbid mental conditions leave an unmistakable mark upon the body. Whatever is repugnant to the moral sense is harmful to the body. Conversely, we know that during hours of cheerfulness and pleasurable excitement the respiration is more rapid, circulation quicker, and other bodily functions proceed at an increased rate. This could not be true, unless the cells of which the bodily organs are constructed were themselves more active, and cellular activity means metabolism. The essayist stated, as his thesis, that emotion is a mental process, that it affects metabolism in the secretions of the body and also that kind of metabolism which affects muscular energy, and that it is demonstrable by qualitative analysis. He quoted from the experiments of Dr. Elmer Gates, of Washington, to show the effect of emotional stress and its power to affect metabolism, and that the mind acts upon the body chemically through the mediation of emotion.

In proof of the foregoing contention he cited physiological experiments made by Dr. Gates upon human beings, to show that in a case where the patient had been subjected to the depressing effect of unpleasant emotions for a considerable period of time, the amount of urea and indigotin excreted by the kidneys was more than doubled in comparison with the normal standard in the same

patient. Experiments with regard to the effect of anger upon metabolism showed that salivary secretion presented an increase of from 50 to 200 per cent. in sulfocyanids during intense anger. The practical application of the principle brought out in the paper was that, beginning with himself, the dental operator should endeavor positively to crowd out of his life depressing influences and secure a persistent dominance of that which was cheerful and comforting, the only method by which we may ultimately gain mastery over our bodies. By a deliberate dwelling upon cheerful, comforting subjects, by determinedly attaching our conscious thought to the good, the kindly, the best that we can see in everything about us, we shall ultimately drive out the base and unjust foes of our bodies and minds. A persistent domination of cheerfulness upon the operator's part will drive out the depression of the patient. Emotions are subtly contagious,—there is a dynamic property in them not generally recognized. Strive for a relaxed condition of body, avoid stress, avoid tension in the throat and raised diaphragm over sensitive patients; it restricts circulation and wears one out.

We feel keenly the need of sterilized hands, napkins, and instruments; just as surely do we need anabolic surroundings, body, and mentality.

In the paper is given briefly a little light upon the laws which are concerned with the operation of the mind in its relation to the body. Each will draw deductions from facts peculiar to his own experience in practice, and their ethical value will be apparent. One cannot know these truths and endeavor to learn more of them without placing an ethical value upon many actions and conditions heretofore unheeded. The potency of our conscious thought which we can control in its relation to our subjective states and our physical bodies suggests the impress that must be made upon other minds and upon other matter.

With this central idea, there will inevitably be discerned the marks of the basic principle upon which evolution in its endless adaptation operates, and man's partnership therein. This last fact accentuates the burden of ethical responsibility resting upon us.

#### *Discussion.*

Dr. C. H. NICHOLSON, Rochester, congratulated the essayist on the original manner in which he had presented his subject. He was not aware of any other effort that had been made to treat the ethical relation which should exist between the dentist and his patient in a manner similar to that they had just heard. He considered the tone of the paper a high one and well calculated to produce an elevating effect on the moral sense of duty dentists owe to their patients. The line of argument adopted has enabled Dr. McAlpine to build up a fine theory, and while he was hardly prepared to accept all the conclusions arrived at as logical, still sufficient stability is given the position occupied to enable us to make some practical and valuable deductions.

Metabolism is a process of life, but whether the argument which



follows this proposition is the doctor's own, or that of Dr. Gates, one does not gather from reading the paper. Dr. Nicholson, from his present understanding of the matter, was not prepared to accept it as proved. It is stated that "a unicellular organism that cannot feel is dead; to feel implies possession of mind; vitality is mentality and *vice versa*." These assertions can hardly be accepted as proved. Speaking from an emotional point of view, which is evidently intended, a unicellular organism does not feel. Metabolism is a physiological rather than a mental process. Protoplasmic bodies are possessed of self-sustaining and reproducing powers, but it could hardly be said that these acts are the result of mentality. The smallest creations of the animal world instantly seek protection or a means of escape in the presence of danger, but the worm which shrinks back into its hole in the earth at the touch or approach of its enemy can hardly be accredited with reasoning powers to produce its action. A thought is not the product of a unicellular activity but rather of a multicellular. In the same way the action of a muscle cell does not flex the arm, but the combined contraction of all the cells which go to make up the muscular tissue concerned in that action.

He agreed with the essayist that the pleasurable, cheerful emotions are productive of anabolic conditions, and the opposite of depressing and sad mental conditions; but we must remember that, under certain circumstances, intensely pleasurable emotions are quite as capable, if not more capable, of terminating life than those of a sad and depressing nature. He would accept the proofs deduced from Dr. Gates's experiments as more convincing if the results could have been produced without the consciousness of the subject of the end desired to be reached, and thought the same results could be obtained from suggestion, and even more astonishing results. We all know that under great mental exhilaration a man will accomplish wonderful things, acts which would be impossible to him when in an ordinary frame of mind, but on the other hand sadness which moves to desperation will produce just as marvelous feats of strength or of mental activity.

Temperament should have some place in the consideration of this subject. Contrast the beautiful form and well-developed outline of the happy, clear-complexioned, blue-eyed sanguineous temperament with the heavy obesity, sluggish mentality, unemotional nature of the phlegmatic, and tell me what part the pleasurable emotions took in the constructive metamorphosis of these two types.

Turning to the practical portion of the paper, he believed with the writer that much good can be done to our patients, and our own troubles relieved, by a cheerful, confident manner, a feeling of confidence which can be imparted to patients, reinforced by a gentle firmness which will convince them that you know your business and are master of the situation. This will result in a relaxing trustfulness which will relieve the operation of much of its horror. Nervous patients suffer more pain than they actually endure; the mental agony is greater than the physical pain.

Man has a many-sided nature, the supreme aspect of which is the spiritual,—that which reaches out after the divine; it is associated with his moral nature and that which we call conscience, which commends him for doing right and condemns him for his wrong-doing. At the other extreme we have his physical or animal nature, made up of his cravings, appetites, and functions of life; but influencing and controlling all is his intellectual nature, where reason, majestically seated on her throne directs his spiritual vision to the ultimate termination of his earthly career. If on this,—the broadest, deepest, and most powerful aspect of man's nature, the intellectual,—we can exert an influence and by a gentle word, a cheerful manner, a reassuring smile relieve our patients of so large a part of their sufferings, who shall say that such an effort, made in the name of and for the sake of humanity, shall be unrewarded? Or if one of us shall be stimulated to greater endeavor along this line by a thought prompted by the hearing of Dr. McAlpine's paper, who would say that it had been written in vain?

Dr. F. W. PROSEUS, Rochester, said the essayist has given us a paper containing thoughts that are practical to us and useful in our everyday work. The ground of the influence and control we may and do exert by our personal attitude over our patients has been fully covered, and we have learned a useful lesson from the essayist. In his belief the advance of science and thought in this age was such as to warrant the hope that we are approaching the understanding of the "sixth sense,"—that little-understood faculty that receives impressions otherwise than through the ordinary perceptions.

We learn that the mind controls the body in the sense of tearing down and building up its substance, in retarding and assisting in organic changes, and from this we receive lessons which if carried into our everyday life will increase both our happiness and our usefulness. We are so differently constituted that it is scarcely possible for two men to be found who will carry out any project in just the same way, but by effort much of this can be overcome, and could the man of gloomy disposition be made to see things as the happier-dispositioned man naturally does, he would be better able to withstand the worries and difficulties of life, and the weight of sadness in the world would be largely decreased.

Dr. McALPINE said it was a well-known fact that, as blind matter, every physiological particle has mind, or exercises mental control over its own processes. Take the hand of a child too young to reason at all, and let it be scratched or injured in any way: immediately the processes of repair begin, and the integrity of the organ is restored. All law is maintained by human experience. Emerson says that man is the avenue through which Heaven comes to the earth, and is the only avenue.

Every unicellular molecule has, not self-conscious mind, but mind for all that, and this is shown in its carrying out acts adapted to ends.

People are constantly influencing us in such a way as to determine what we shall be, and this through our emotions. Our tempera-

ments are in part inherited, it is true, but they are subject to change. The old rule, "Resist evil and overcome evil with good" is the way to overcome the old tendencies and replace them with better ones. In early life we are continually educating our muscles to automatic action that finally becomes so much a part of their nature that they are repeated without a conscious thought or effort on our part. Thus also our thoughts and feelings become educated by exercise, and become in time nearly as we desire them. Dr. Proseus uttered a truth when he said that we are entering upon the dawn of the discovery of a "sixth sense,"—upon a knowledge of the fundamental laws that have governed evolution. Man in his entire nature is an evolved product not only in his physical, but as well in his mental nature, and the mind is the prime motor that has determined and does determine what we have become and what we are to be.

The subject was passed, and the following paper, by Dr. L. P. SANFORD, Binghamton, N. Y., was read:

#### THE DENTIST'S DUTY TO HIS PATIENT.

I do not come before you claiming any new ideas, but desiring only to express a few thoughts upon the dentist's duty to his patients in respect to the care of the mouth, hoping to arouse a deeper interest in a very important but much-neglected subject and make its practical value more apparent. Assuming, as we do, the responsibility, is it not our duty to give our patients the best possible knowledge we possess concerning the care and the preservation of the mouth? Is it not our duty to so instruct our patients in the daily care of their teeth that they may save and preserve what the Creator has given them? Such a course is not only just, but it would help us and make our work easier and pleasanter. Then why should we so fear to do it? Should we sacrifice honor and reputation for the mere sake of obtaining the "almighty dollar"? Ought we not to give our patients the benefit of such personal advice as every competent dentist can? It is necessary first to gain the confidence of our patients, and to that end every engagement must be kept; the personal appearance of the practitioner and the condition of his office must always indicate neatness and cleanliness, and the office should be kept free from the odor of drugs. We must treat all with courtesy and abstain from gossip. Jealousy of others or speaking against their work will only injure our own influence. Intelligent people discount bragging advertisements and big signs; successful work done for our patients constitutes our only proper advertisement, and it will tell in the long run. In this way we gain the respect and confidence of our friends.

Children should be taught the proper care of the teeth, but we must first instruct their parents, who should be made to realize the intrinsic importance of saving their teeth. How often people come to us with an aching tooth, and say, "Pull it out!—it does not matter, away back there." Such remarks are but evidences of popular ignorance. The sacrifice of teeth in this twentieth century by the so-called dentists,—advertising quacks,—would lead one to



believe that the principal use of teeth is to give employment to the gifted "painless dentists." No one can expect to have perfect teeth unless he does his part in caring for them. Parents should provide each child with a proper tooth-brush and insist upon its habitual use. They should be taught that to care for their teeth daily is a duty they owe to their Maker. Let them understand that cleanliness will prevent decay. Can an engineer expect his engine to be always in good condition unless he cares for it? Nor can we expect our teeth to be in good condition without constant attention. We ought to instruct our patients who are parents that their children must early acquire the habit of using a tooth-brush twice a day with an antiseptic wash. Children are our most troublesome patients, requiring a great deal of tact in their management in dental work. They should be furnished with a mouth-wash that would not be disagreeable but on the contrary pleasant, such as glyco-thymoline, which is not only an antiseptic, but also an antacid. Let them feel that to use this must be a daily duty; then as they become older they will no more think of neglecting the daily care of their teeth than neglecting to eat their meals.

We should also teach parents the evil of prematurely extracting teeth, showing them that the temporary teeth are necessary for preserving the arch for the permanent teeth.

Though some stubbornly refuse to learn wisdom in the care of teeth, and in preserving them, especially the deciduous teeth, we must not become discouraged, but keep on impressing these truths upon their minds, and the reward is sure to come.

Of course, we reach comparatively few. The public schools teach physiology and hygiene, but that is not enough. If we could be aided by the public press our labors would be greatly lightened and the good results greatly extended. Dr. Warner's plan as outlined in the *Cosmos* in 1893 would, I think, materially aid us. He advocates the forming of a committee in each local dental society for the purpose of presenting to the public, through the newspapers, interesting and instructive articles on dentistry, thus keeping the subject before the people and gradually bringing them to a better understanding of the nature and hygiene of the teeth and of the laws for their care and preservation. In this way we could have the consciousness of having discharged our duty to our patients and the public.

### *Discussion.*

Dr. W. W. SMITH, Penn Yan, N. Y. The essayist is to be commended for bringing to our notice so many good points on a subject which strikes at the very essence of our life-work; for it matters not how much preparation we may have had or how skillful we are if our services are not appreciated and an effort is not made by the patient to co-operate with us and supplement our work with the care that is necessary to preserve it. It matters not how large may be our pecuniary gains, we are deprived of the pleasure and satisfaction that comes only when conscious that these results have been obtained. Without this we are, in the highest sense, failures. The doctor has wisely said that it is important to gain the confi-

dence of the patient, and has given good advice as to how best to accomplish this, all of which I wish to emphasize, especially when he says, "Successful work done for our patients constitutes our only proper advertisement." This surely amounts to more than any amount of boasting or speaking disparagingly of our *confrères*. I wish to add a few thoughts which have been suggested by the paper and which will, I am sure, meet with the approval of its author. If the dentist bears a character that is above reproach and himself feels a deep interest in his profession, he carries with him an atmosphere in which confidence will naturally be inspired in the patient. The suggestions given in the paper should be heeded, but it is the personality of the dentist that counts most; he should be himself, and act and talk in his own way, remembering that real interest in people and subjects is communicative. Introduce to me a half-dozen patients of any dentist and I will tell you the character of that dentist. A few years ago an observing dental student who had spent some time in the office of a dentist in his own town went with one of an adjacent town. After having spent some time with him, he one day remarked, "You have a very different class of patients from those at home; people coming to you take an interest in their teeth and want them saved, while those at home do not see the importance of saving them; the only thought seems to be to have them extracted." Now the general character of the people in the two towns mentioned did not differ; the difference was in the dental teaching they had received. The advice given in the paper in regard to instructing parents and children is good. I cannot, however, quite agree with all the doctor says in regard to educating through the public schools and the press. If I understand correctly, the instruction given in physiology and hygiene in our public schools barely touches on dental hygiene. I think something can be done by a judicious committee from local societies in interesting mothers' clubs and boards of education, showing them the importance of more extended knowledge of this subject, thus creating a demand which will at least make the services of members of our society acceptable in giving lectures at their meetings, thus interesting these women, and this will be far-reaching, not only in its effects upon the schools but in their own families. Work of this kind is being inaugurated in this city which already promises to be fruitful. To my mind, any organized effort to educate the public through the press is not practicable, as it would, I think, be impossible to rid the public of the idea that it was prompted by selfish motives.

Dr. BURKHART said the thoughts brought out in this paper should be taken to heart by every dentist. It is our duty to educate our patients in the general care of the mouth, and to impress upon them that frequent examinations are necessary if the teeth are to be kept in order and preserved through life. The common experience of a dentist is to treat a patient and put the teeth in good order, then not to see him again for a year or two, when he finds that the work that should have been looked after has gone to decay because of the delay and neglect.

He believed the character of the teeth of children was affected by the diet and condition of the mother, and he felt that this subject should be impressed upon the children in the public schools. His experience had convinced him that the food and care of the mother, if selected with this view, would benefit the teeth of the child yet to be born.

Dr. B. S. HERT, Rochester, thought the conversational method of the dentist with his patient at the chair was by far the best means of education at our command. The school-children have enough to study now, and while they might be forced to take up the subject, perhaps it would not be likely to be of much benefit to them.

Dr. H. B. HUVER had hoped all through the meeting that some one would take an opportunity to speak of the method of prophylaxis advocated by Dr. D. D. Smith, of Philadelphia. He was sure that it was a step in the right direction, and that if generally practiced it would lead to a revolution in the conditions of the teeth of our people. He was treating his own daughter, who was now three years old, by the method, and wished to go on record as expecting that when twenty years of age she would not have a single cavity of decay in her mouth.

Another duty the dentist owes to his patient is to set a good example not only in his own mouth, but in the mouths of the members of his family. Any lack in these directions is very likely to weaken the force of any teaching he may give his patients.

Dr. F. A. GREENE, Geneva, said that dentists have usually two kinds of practice,—one a general practice, made up of people who come to them in emergencies and have work done because they must, and a family practice, consisting of people who are his regular patients and to whom his services are generally rendered through a series of years. In the latter class the dentist should not allow any cavities to develop in the teeth of the children. The parents should be instructed to bring the children to the office as soon as the first teeth appear, and from that time on the dentist should keep careful watch over them. He had one family of which both of the parents had been his patients before marriage, and the whole family have ever since. When the daughter was a child there were defects in the enamel of some of her teeth, which he treated and saved from decay. If these had been neglected until the time the child might have been brought to him unasked, there would have been large cavities instead of pinhole spots. Children's teeth will not decay extensively if cared for in time, and this is a duty we owe to our patients.

When the temporary teeth have decayed so that filling them would necessitate the killing of the pulp he does not believe in filling them, because the roots would not be absorbed. We should see the teeth early enough and often enough to fill the cavities while they are very small and thus check the decay.

Dr. BURKHART said that the mother's food before the child is born will have an effect upon the structure of the teeth of the child just as surely as her habit of mind will affect the mind of the child.



If her mind at this time is turned toward music, for instance, the child will be almost sure to be musical, and if the mother eats foods rich in lime and phosphates, the child's teeth will have a much better structure than if her diet is poor in these elements. The teeth of the present generation are inferior to those of our ancestors, and this can be charged to the exclusive use of fine white flour at the present day.

Dr. M. D. JEWELL, Richfield Springs. The question, Is the instruction of children on dental and oral hygiene in the public schools worth while? may depend upon the instructor. We had one in our schools that went into the work with the proper spirit and a true idea of what she should try to accomplish. To carry out her plans she came to me, and I supplied her with charts showing the teeth, their order and arrangement, also with books for her own study. She gave her pupils the advantage of her knowledge thus gained,—the value of the teeth, the means necessary for their preservation, and the prenatal effect of the mother's food upon the bones and teeth of children. Such teaching as she gave is certainly efficacious for good.

Dr. F. M. ROOD, Rochester, asked Dr. Burkhart what character of food he recommended to mothers for the improvement of their children's teeth.

Dr. BURKHART said whole wheat, rice, and fresh fruits. His idea is to have the foods eaten as near their natural state as possible, and it is not only for the good of the child, but for the good of the mother as well. The cereal foods in general are good, and among them it is better to let the mother choose that which suits her taste.

Dr. HUYER thought the main thing was to have such foods as will require work from the teeth in mastication. Teeth that have plenty of work to do will never suffer from pyorrhea.

Dr. GREENE, Geneva, thought general exercise in the open air was much more important than any selection of food. He spoke of a family of five sisters all of whom are married and have children, and all anxious for the health of their children, buying and using every advertised health food that comes out, but with little effect. On the other hand, they avoid all physical exertion, nor do they require it of their children. Any of them will have a carriage brought out rather than walk even a short distance, or if the carriage be not used will resort to the trolleys. Exercise is essential to health and will build up the strength of every part. He thought the medical and dental professions should take up the subject of health foods and find out for the benefit of the public whether they were really beneficial or not.

Dr. F. E. HOWARD, Buffalo, said the teaching in the public schools is often so trifling that it is impossible for the children to thoroughly learn from the schools the importance of taking care of the teeth and the methods of doing it. How can the public judge as to who is a good dentist. We are taken in by lawyers, cheated by agents, and deceived by those in other callings with

which we are not familiar. It is no wonder then that the public sometimes fail to discriminate in favor of the professional dentist, but the fact that we as professional men are exerting our influence toward the free teaching of how to preserve the dental organs will increase the respect of the people for us.

Dr. W. W. SMITH, Rochester, said he was very much interested in the experiment Dr. Huver was to undertake with his daughter, and hoped he would live to see her when she was twenty years old and congratulate Dr. Huver on its success. Just about seventeen years ago he had a daughter three years of age and he had given her the best attention he knew how; still there were cavities in her teeth, in spite of him. As to Dr. Howard's question, about how the people were to know who was a reputable dentist, he knew it to be a fact that people were beginning to inquire into the society affiliation of the dentists and to have increased confidence in those who were identified with such professional bodies as our state, district, and national associations. This knowledge on the part of the people is a good thing for them and for us as well.

Dr. F. A. GREENE, Geneva, said this was one reason why we should preserve the ethical standard in our societies, upholding it by being careful how we take in members without being sure of their characters. We of course want as large a membership in our societies as possible, but do not want any man who has not proved himself a man fit for association with professional men. There are men who would gladly use their membership in a dental society as an advertisement and endeavor to make it an advantage to themselves in that way. We do not want any man to join our association for such a purpose.

The subject was passed, and there being no other business before the convention, it adjourned to meet with the Eighth District Society at Buffalo, the last Tuesday in October, 1902.

#### CLINICS.

The clinics occupied the morning session of the second day of the meeting, about forty clinicians being present. A few of the operations are reported, as follows:

Dr. R. KESSEL, Buffalo, N. Y. ("A seamless gold crown that must fit.") He claims that his system of making seamless gold crowns overcomes the one objection that all dentists have found to seamless gold crowns,—that is, the difficulty of getting a perfect adaptation of the band to the root. His method is to use the copper bands made for the Berry crown outfit, of which he keeps quite a number on hand of different sizes. After the root is shaped he takes a wire measure and then selects the corresponding copper band. Say, for instance, the band corresponds to punch No. 4. He drives the band on the root just as a cooper drives a hoop on to a barrel. With this in place he takes an impression, runs the model, and when this is thoroughly hard he cuts off the band and throws it away. He has now a sharp outline of the root with festooned gum margins. He then draws a gold disk the size of a ten-cent piece down to No. 4 punch, hammers suitable cusps on

the ferrule, tries it on the model, and articulates it with the antagonizing teeth. At the next sitting he adjusts the crown in the mouth and if found to be perfect he fills the cusps with solder, polishes it and cements it in place. He uses Aderer Bros. non-oxidizable gold 23-k., 30 gauge.

Dr. A. McALPINE, Bradford, Pa., demonstrated the use of a special diamond drill in making cavities in artificial teeth and filling the same by hand pressure and wiping. The fillings were contour and approximal, and were made with a view to imitate fillings in natural teeth. The display of gold *per se* was regarded as objectionable. Some excellent examples of small contour fillings were shown.

GEO. T. MOORE, Geneseo. (Use of J. C. Graft's pliers for repairing bridge-work.) This model of ingenuity is the invention of J. C. Graft, of Newark, N. J. Each pair of pliers is accompanied by two drills and four corrugated burnishers of different shapes and sizes. The drills are used to cut new holes in the backings to receive the pins of the new facings, the burnishers to polish the backings after the facings have been properly placed by the pliers.

The pliers are shaped much like ordinary crown pliers, except that on one jaw there is a small thumb-screw by which is adjusted a blunt point of hard metal for riveting the ends of the pins to the backing. This point is set in a transverse loop on the jaw of the instrument so that it can be adjusted to fit accurately the case in hand. On the other jaw of the instrument is a round, flattened, slightly concave disk of soft metal which moves forward and back on a single axle so that the hollow and soft surface will fit perfectly to the outer and convex surface of the facing, thus holding it in place while the pins are being riveted by the lateral motion of the hard point.

To replace a facing upon a crown or a bridge by this method, first remove all broken-down pieces of the old facing and grind the pins off flush with the backing; then select a facing of proper shade and size, and mark on the backing the places for the new pin-holes and drill the holes. After the facing has been properly fitted to the backing, spread on the latter a little thin cement and with the pliers press the facing firmly to place, so as to remove excess of cement, keeping the pressure up until the cement is hard. The pins are now cut off, leaving only enough protruding through the backing to form a rivet-head. The pliers are then adjusted to the tooth and the pins riveted by the lateral motion, after which it only remains to finish with the corrugated burnishers.

V. WALTER GILBERT, Philadelphia. (Porcelain.) The object of this clinic was to show the application of high-fusing porcelain to crown- and bridge-work, demonstrate a method of making sample shades of porcelain from the basal colors supplied by the manufacturers, and show the application of mineral stains in changing the shade of porcelain teeth, imitating natural discolorations, accumulations, etc.

G. F. BOWMAN, Tidioute, Pa. (Preparation of an approximal central incisive angle and insertion of a gold filling, using the lock stop for anchorage of the mesial portion of the filling.)



J. J. MILLS, Port Jervis, N. Y., described his method of operating. Dr. Mills objects to operating over or under a dental bracket; he considers it objectionable to have the instruments spread out before the eyes of the patient, who naturally watches each one the dentist touches and learns to dread the repeated use of any which may have caused pain. He thinks that simply seeing the equipment adds to the suffering of a sensitive patient. Besides this, an array of drugs on the bracket may be unpleasantly evident to the patient's sense of smell, and even a tumbler is liable to be knocked over. Instead of the bracket he uses a heavy table about thirty-six by eighteen inches, containing convenient drawers and slides, placed behind the patient. On this he places a small Bunsen burner for annealing gold, etc., his saliva ejector, and such instruments as he will need. He operates sitting on a stool almost in front of the patient, so placed that he will not have to inhale the patient's breath nor the patient his. His cabinet is within easy reach, and with his left hand he can get any instrument on the table. He has practiced this method over twenty years and finds it better both for the patient and for himself.

---

### EASTERN DENTAL SOCIETY OF THE CITY OF NEW YORK.

OUR recently organized society has elected the following officers: S. J. Sheckter, president; M. A. Schwartz, vice-president; Dorothy J. Maryson, secretary; E. Gluskin, treasurer.

Meetings are held first Thursday of each month, at 209 E. Broadway. Visitors always welcome.

DOROTHY J. MARYSON, *Sec'y*.

---

### SAN DIEGO, CAL., DENTAL SOCIETY.

THE San Diego, Cal., Dental Society was organized November 12, 1900, with a membership of 14, with officers as follows: R. F. Philips, president; H. R. Harbison, vice-president; Emma T. Read, secretary; A. H. Gilbert, treasurer.

The stated meetings are held first Monday of each month.

The officers elected October 7, 1901, are—C. L. Good, president; E. W. Sheriff, vice-president; Emma T. Read, secretary; A. H. Gilbert, treasurer.

---

### KANSAS STATE DENTAL ASSOCIATION.

THE Kansas State Dental Association held its thirty-first annual meeting at Hutchinson, Kans., May 8, 9, and 10, 1902. The meeting was one of the best in the history of the society, both from the standpoint of attendance and that of interest in the proceedings. Dr. A. W. Harlan was the guest of the association. The following officers were elected for the coming year: W. A. Coston, Fort

Scott, president; T. I. Hatfield, Marysville, first vice-president; J. W. O'Bryon, Lawrence, second vice-president; Geo. A. Esterly, Lawrence, secretary; G. F. Ambrose, Eldorado, treasurer; S. J. Reuz, Leavenworth, supervisor of clinics.

J. W. O'BRYON, *Sec'y.*

### NEW ENGLAND ASSOCIATION OF DENTAL EXAMINERS.

THE New England Association of Dental Examiners held their sixth annual meeting and banquet, April 22, 1902, at Hotel Brunswick, Boston, Mass. Representatives from all the New England states except New Hampshire were present. Dr. William Carr and Dr. William Jarvie of the New York Board and Dr. Charles A. Meeker of the New Jersey Board were guests of the Association. "Methods of Conducting Examinations" and "How Best to Enforce the Dental Laws" were interestingly discussed by all present.

The officers elected for the ensuing year are: D. W. Fellows of Portland, Me., president; P. J. Heffern, Pawtucket, R. I., vice-president; Geo. A. Maxfield, Holyoke, Mass, recorder; John F. Dowsley, Boston, Mass., chairman of executive committee.

### OHIO VALLEY DENTAL SOCIETY.

THE reorganized Ohio Valley Dental Society starts with a membership of about thirty, and the outlook is promising. Its first regular quarterly meeting was held in Steubenville, Ohio, April 7, 1902. The next meeting is to be held in Wheeling, W. Va., July 7th.

JNO. H. McCLURE, *Sec'y.*

### DENTAL COLLEGE COMMENCEMENTS.

#### NEW ORLEANS COLLEGE OF DENTISTRY.

THE annual commencement exercises of the New Orleans College of Dentistry were held at the Grand Opera House, New Orleans, La., on Tuesday evening, May 6, 1902.

The annual oration was delivered by Judge Walter H. Rogers, LL.B., and the valedictory address by John Holmes Beatty, D.D.S.

The degree of D.D.S. was conferred on the following graduates:

Charles Henry Beatty.	Marion A. Ledbetter.	Oscar Dewitt Varnado.
John Holmes Beatty.	William Milton Miller.	Paul de Verges.
John Joseph Colomb.	George John Mire.	Joseph Peter Wahl.
Thos. Harris Cotten.	Robert Emmett Nettles.	Carl Horace Weber.
George F. A. Eckhardt.	William Roeling.	Coburn H. Williams.
Charles George Lanaux.	Harry James Siess.	

## UNIVERSITY OF BUFFALO, DENTAL DEPARTMENT.

THE annual commencement exercises of the Department of Dentistry of the University of Buffalo were held at the Star Theater, Buffalo, N. Y., on Tuesday, May 6, 1902, at 2 P.M.

The degree of D.D.S. was conferred upon the following graduates:

Dwight H. Allen.	Wm. J. Graham.	Hubert A. Newton.
Clarence J. Ash.	Thos. H. Gray.	John D. Ogden.
Frank S. Barons.	Wm. A. Griffith.	Robt. F. Roberts.
Richard W. Barry.	Arthur S. Hasbrouck.	Sarah M. Schake.
Orren W. Bates.	Fred. C. Havens.	E. E. Schnitzpahn.
Louis G. Beardsley.	Horace B. Hawley.	H. E. Schottky.
Arthur DeW. Becker.	Albert W. Hodges.	Raymond S. Scovil.
Geo. M. Budlong.	Eber L. Inman.	H. H. A. Semtner.
Andrew D. Cook.	Fred. W. Kaiser.	Harold R. Skinner.
H. E. Cunningham.	Ernest H. Kelsey.	Harlow R. Stevenson.
Fred. B. Dudley.	Dimmick E. Lamb.	B. E. St. John.
James R. Dudley.	Wm. H. Leak.	Claude H. Story.
Willard L. Dutton.	Geo. L. Leitze.	Earl S. Strong.
John G. Elliott.	Chas. E. Lewis.	Edw. L. Sugnet.
Thos. E. Evans.	Walter T. MacPherson.	H. W. Taylor, B.A.
Jesse L. Exford.	James P. Mallory.	Wm. L. Tucker.
David Fawdrey.	Hector G. Marlatt.	Emerson P. Washburn.
DeForest Findley.	John T. McIntee.	J. L. Weller, Jr.
L. W. Gallagher.	Alton DeW. Mesick.	Albert M. Wilbor.
Wm. DeF. Gamble.	Clifford F. Moll.	Norman T. Williams.
Fred. A. Garvin.	Peter McPherson.	Henry C. York.
Raeseide A. Gemmill.	Chester C. Milne.	Czar E. Zeluff.
Wm. C. Gigalski.		

## ATLANTA DENTAL COLLEGE.

THE annual commencement exercises of the Atlanta Dental College were held in the Grand Opera House, Atlanta, Ga., Monday evening, April 28, 1902.

The degree of D.D.S. was conferred upon the following graduates:

S. Whitten Baker....	Alabama.	Chas. A. Little.....	North Carolina
Frank D. Bittle.....	Texas.	Sam'l Wray Looper.	Georgia.
David J. Blasingame	Texas.	J. Henry Lorenz....	South Carolina.
Thos. Edwin Brent..	Mississippi.	Homer M. Lynch....	Georgia.
Thos. J. Campbell...	Mississippi.	B. S. Lyon.....	Mississippi.
A. F. Carter.....	South Carolina.	Miss L. McCormick..	Mississippi.
Ralph B. Chappell..	South Carolina.	J. A. Mayo.....	Georgia.
Owen Lee Chestnut.	Georgia.	Ed. S. Mitchell.....	Florida.
Miss Cara C. Collins	Alabama.	Jas. C. Owen.....	Georgia.
Eug. F. Delisle....	Texas.	Jno. A. S. Pike.....	South Carolina.
J. L. Donald.....	Mississippi.	Fuller H. Pittman..	North Carolina.
J. Lafayette Dupree.	Georgia.	Geo. W. Randall....	Alabama.
Edmond D. Foster...	Mississippi.	Osep N. Ruben.....	Georgia.
B. S. Guest.....	Georgia.	Alexander C. Smith.	Alabama.
Wm. K. Gunter....	South Carolina.	Marvin M. Smith...	Georgia.
Henry D. Harper, Jr..	North Carolina.	Joseph M. Staples...	Texas.
J. L. Hicks.....	Texas.	J. M. L. Strickland.	Georgia.
Israel Jonas.....	Mississippi.	Ralph E. Swift.....	Illinois.
E. Haskell Kibler..	South Carolina.	Lucius L. Toole....	South Carolina.
Ralph C. King.....	Georgia.	L. H. Trotti.....	South Carolina.
Olin Kirkland.....	Alabama.	Chas. Bernard Watts	Georgia.
C. S. Latimer.....	Georgia.	Willis J. Wilkins....	Georgia.
J. S. Lightner.....	Georgia.		



## PENNSYLVANIA COLLEGE OF DENTAL SURGERY.

THE forty-sixth annual commencement exercises of the Pennsylvania College of Dental Surgery were held at the Academy of Music, Philadelphia, Pa., on Tuesday evening, May 6, 1902.

The address to the graduates was delivered by Prof. Percival E. Loder, M.D., D.D.S.

The degree of D.D.S. was conferred on the following graduates:

I. Abrahamson.....	Pennsylvania.	Robt. D. Leary.....	Massachusetts.
M. Abrahamson.....	Pennsylvania.	Isaac B. Lowe.....	New Jersey.
Jessie M. Allen.....	Pennsylvania.	Robt. C. Lougheed....	Ontario, Can.
Eugene B. Bardo.....	Pennsylvania.	Leo J. McManus.....	New Jersey.
Lester H. Bayne.....	Pennsylvania.	Bernard McPartland	Massachusetts.
Fred A. Bean.....	Massachusetts.	Wm. A. Manon.....	Pennsylvania.
S. C. Biddle.....	Pennsylvania.	Sidney A. Martin....	Ohio.
C. M. Bowles.....	Pennsylvania.	Henry L. Miller.....	New York.
Frank G. Brown.....	Pennsylvania.	M. W. Miller, M.D..	Pennsylvania.
Geo. A. A. Bruce.....	Chile.	Geo. S. Mills.....	New Brunswick.
N. J. Briskman.....	Russia.	Theo. A. Morley....	Pennsylvania.
Samuel Caldwell.....	Ireland.	David C. Mullen.....	New Jersey.
Francis B. Coll.....	Pennsylvania.	Luther B. Nicely....	Pennsylvania.
O. P. Coleman.....	Canada.	Orville R. Niece....	New Jersey.
Edwin F. Cory.....	Connecticut.	Jacob T. Novack....	Pennsylvania.
Alfred Curley.....	Massachusetts.	Justin E. Nyce.....	Pennsylvania.
Carlton P. Day.....	New York.	T. F. O'Keefe.....	Pennsylvania.
Leroy F. Deale.....	New York.	M. F. O'Connell.....	New York.
R. R. De Armond.....	Pennsylvania.	Geo. L. Pardee.....	Delaware.
R. E. Denney.....	Delaware.	Jno. K. Parsons.....	Pennsylvania.
W. C. Dingman.....	New York.	C. M. Patterson.....	Pennsylvania.
Ralston F. Elwell....	New Jersey.	H. B. Patterson.....	Pennsylvania.
Max Fleischmann.....	New Jersey.	Anna V. Peck.....	Pennsylvania.
Frank J. Gibbons.....	Pennsylvania.	J. T. Prichard.....	New York.
Jas. W. Goddard.....	Massachusetts.	G. A. Reherd.....	California.
John H. Gorman.....	Canada.	B. A. Reynolds.....	New York.
Samuel H. Gump.....	Pennsylvania.	Dorothy Rothfeder..	Russia.
Robt. P. Gerner.....	Pennsylvania.	Frank G. Ritter.....	Pennsylvania.
F. B. Hanhauser.....	Pennsylvania.	Francis W. Sadler...	Pennsylvania.
A. C. Hanscom, A.B....	Maine.	Alva J. Savacool....	New Jersey.
Martin L. Harter.....	Pennsylvania.	Annie M. Sellors....	Pennsylvania.
Louis A. Hawkes.....	Massachusetts.	Ivan V. Shipman....	Pennsylvania.
D. B. Hawley.....	Connecticut.	C. D. Shute.....	New Jersey.
Louis Herbst.....	Pennsylvania.	Jno. T. Slaton.....	Kentucky.
Frank B. Hess.....	Pennsylvania.	Joseph Solot.....	New York.
Mary Huebner.....	Pennsylvania.	L. S. Sotomayor.....	Chile.
J. J. Henchey.....	New York.	H. G. Stewart.....	Pennsylvania.
Albert G. Hindes.....	New York.	Arthur L. Sweet.....	Vermont.
Howard Jones.....	Pennsylvania.	H. P. Van Hart.....	New Jersey.
Clyde H. Kast.....	Pennsylvania.	Herbert D. Waldo...	New York.
Wm. F. Kenney.....	Nebraska.	Jay P. Waterson....	Ontario, Can.
Millard L. Knox.....	New York.	Ezra W. Witter.....	Ohio.
H. J. Lambrecht.....	Pennsylvania.	Jas. B. Williams....	Connecticut.
M. A. Langsfeld.....	Pennsylvania.	Jas. T. Yoder.....	Pennsylvania.
Frank D. Leipold.....	Pennsylvania.	Thos. W. Young....	Pennsylvania.

## OHIO COLLEGE OF DENTAL SURGERY.

THE fifty-sixth annual commencement exercises of the Ohio College of Dental Surgery took place at the Odéon, Cincinnati, Ohio, on Thursday, May 8, 1902.

The annual address was delivered by Rev. Henry M. Curtis, and the class address by Earle W. Swinehart.

The degree of D.D.S. was conferred on the following graduates:

R. M. Andruss.....	Washington.	G. A. Hickman.....	Kentucky.
G. R. Apfelbaum.....	Ohio.	R. L. Huey.....	Kentucky.
W. J. Arink.....	Kentucky.	H. M. Jordan.....	Ohio.
W. B. Armstrong....	Kentucky.	E. H. Kahn.....	Missouri.
F. S. Ball.....	Ohio.	P. N. Kestner.....	Indiana.
J. R. Barg.....	Kentucky.	R. H. Langdale.....	Ohio.
M. E. Beinhart.....	Ohio.	T. R. Levan.....	Ohio.
A. F. Beneke.....	West Virginia.	J. M. Logan.....	Illinois.
G. S. Brooks.....	Kentucky.	C. Longenecker.....	Ohio.
R. M. Brooks.....	Kentucky.	J. C. Longfellow....	Ohio.
A. F. Brunow.....	Indiana.	C. F. Ludy.....	Ohio.
G. E. Bryson.....	Indiana.	H. R. McAnally....	Ohio.
W. L. Bumgardner...	Ohio.	G. B. McClintock...	Kentucky.
R. E. Burbank.....	Ohio.	J. R. Markel.....	Ohio.
F. Burger.....	Ohio.	D. M. Mason.....	Ohio.
F. V. Butcher.....	West Virginia.	H. B. Mathiot.....	Pennsylvania.
B. E. Canfield.....	Indiana.	W. Matthews.....	Kentucky.
C. D. Carley.....	Ohio.	Miss M. D. Meek....	Illinois.
H. E. Caswell.....	Indiana.	R. S. Millman.....	Ohio.
C. A. Chambers.....	Ohio.	H. C. Parrott.....	Ohio.
E. G. Cole.....	Michigan.	R. E. Petty.....	West Virginia.
H. R. Collier.....	Kentucky.	E. M. Poole.....	Ohio.
A. F. Constien.....	Ohio.	C. A. Pride.....	Ohio.
W. T. Davis.....	Ohio.	M. E. Reardon.....	Kentucky.
W. C. DeHart.....	Ohio.	W. J. Richmond....	Kentucky.
J. B. Dill.....	Ohio.	R. L. Rigdon.....	Kentucky.
E. J. Driehs.....	Ohio.	H. H. Schmidt.....	Ohio.
E. J. Early.....	Kentucky.	E. M. Scott.....	Iowa.
J. C. Elder.....	West Virginia.	C. W. Smith.....	Ohio.
W. W. Ewing.....	Pennsylvania.	R. D. Smith.....	Michigan.
Miss A. Feuerstein...	Ohio.	D. G. Stafford.....	Kentucky.
L. C. Flack.....	Ohio.	E. G. Stamper.....	Kentucky.
F. C. Foster.....	Ohio.	E. W. Stratemeyer...	Ohio.
J. F. Givan.....	Indiana.	L. G. Straus.....	Ohio.
J. B. Glenn.....	Kentucky.	E. W. Swinehart....	Ohio.
Miss N. Goodwin....	Ohio.	Chas. Swope.....	Ohio.
J. D. Gordon.....	Ohio.	T. R. Urnston.....	Ohio.
H. W. Grant.....	Ohio.	R. J. Ward.....	West Virginia.
J. G. Hall.....	Ohio.	L. C. Weimer.....	Ohio.
G. W. Harness.....	Ohio.	R. K. Wood.....	Ohio.
V. E. Hayne.....	Ohio.	A. H. Woodward....	Ohio.
J. T. Hedges.....	Kentucky.	E. M. Woolgar.....	Michigan.
A. M. Helm.....	Kentucky.	C. L. Yoders.....	Pennsylvania
J. E. Herman.....	Ohio.	R. C. Young.....	Kentucky.
W. S. Herndon.....	Kentucky.	W. A. Zeter.....	Ohio.

### HOWARD UNIVERSITY, DENTAL DEPARTMENT.

THE annual commencement exercises of the Dental Department of Howard University were held in the Congregational Church, cor. Tenth and G sts., N. W., Washington, D. C., on Tuesday, May 6, 1902.

The degree of D.D.S. was conferred on the following graduates:

Isaac R. Dixon.....	Virginia.	Clarence S. Payne...	Virginia.
Gerald M. Gittens....	British W. I.	William A. Pethel...	North Carolina.
Paul L. Hive.....	British W. I.	Charles R. Thomas...	British W. I.
Harry C. Leslie.....	New York.		

## UNIVERSITY OF MARYLAND, DENTAL DEPARTMENT.

THE annual commencement exercises of the Department of Dental Surgery of the University of Maryland were held in Chase's Theater, Baltimore, Md., on Wednesday evening, April 30, 1902.

The number of matriculates was two hundred and three.

The address to the graduates was delivered by Hon. Olin Bryan, and the class oration by Jos. N. Carriere, D.D.S.

The degree of D.D.S. was conferred on the following graduates:

Geo. J. Anderson... Maine.	Isaac W. Jamieson... North Carolina.
Geo. W. Barr..... Canada.	Geo. O. Linscott.... Ohio.
Chas. F. Becker.... Pennsylvania.	S. E. Lower..... Pennsylvania.
Chas. G. Bishop.... New York.	Chas. G. Lynch.... New York.
W. F. Buchanan... North Carolina.	Wm. E. Maguire.... Massachusetts.
Frank R. Butts.... West Virginia.	C. V. Matthews.... Maryland.
Jos. N. Carriere... Massachusetts.	Jno. C. McAdams... West Virginia.
Willie S. Carroll... Virginia.	C. S. McClelland... Pennsylvania.
Geo. C. Cobeau... Pennsylvania.	Benson L. Miller... New York.
Ronald B. Colvin... Pennsylvania.	John H. Mock..... Florida.
Francis M. Cooper. Missouri.	Patrick H. Moran... New Hampshire.
Philip N. Correoso. Jamaica, B. W. I.	Jas. H. Newbury... North Carolina.
W. J. Cottingham... South Carolina.	Jas. H. Pierson.... Virginia.
Arthur B. Crothers. Pennsylvania.	Chas. W. Plumley... West Virginia.
Addon R. De Pass. South Carolina.	Thos. A. Ralston... Canada.
Sigis. C. De Pass... Jamaica, B. W. I.	Edwin L. Read.... West Virginia.
D. Edw. Duff..... South Carolina.	Herman A. Riviere.. Georgia.
C. M. Easterday... Maryland.	Edw. R. Saylor.... Maryland.
J. Benj. Elgin..... Virginia.	F. S. Schlochau... Texas.
Alexander Freed... Russia.	Jas. B. Sebastian... Delaware.
Alex. S. Foster.... South Carolina.	Curtis A. Sheely... Pennsylvania.
Henry S. Frost.... Maine.	Wm. S. Sheeley.... Texas.
W. G. Gilmore.... New York.	Wm. M. Simkins... Georgia.
L. E. Gilroy..... Canada.	Thos. E. Smallwood. Maryland.
Herbert D. Grove.. Virginia.	Wm. R. Snyder.... Pennsylvania.
John F. Hayden... Pennsylvania.	James E. Swart.... Virginia.
Ernest B. Hill..... West Virginia.	Marvin D. Switzer.. Virginia.
Herbert M. Hucks. South Carolina.	H. O. Wienholt.... Germany.
Burt B. Ide..... New York.	W. D. Winkelman... Maryland.

## CINCINNATI COLLEGE OF DENTAL SURGERY.

THE ninth annual commencement of the Cincinnati College of Dental Surgery was held at the Odéon, Cincinnati, Ohio, on Friday, May 9, 1902.

The annual address was delivered by Prof. G. S. Junkerman, M.D., D.D.S., dean of the faculty. The valedictory was given by Prof. W. F. McLean, M.D., D.D.S.

The degree of D.D.S. was conferred on the following graduates:

Louis L. Anshutz..... Ohio.	Parvy Hill..... Ohio.
John E. Chadwick..... Indiana.	Harry B. Holden..... Ohio.
G. C. Faris..... Kentucky.	Harry A. Maffey..... Indiana.
John A. Henry..... New Jersey.	Edw. L. Tischbein..... Ohio.
Townsend N. Heywood. Ohio.	H. O. Valentiner..... Ohio.



## LOUISVILLE COLLEGE OF DENTISTRY.

THE commencement exercises of the Louisville College of Dentistry were held at Macauley's Theater, May 8, 1902, at 3 P.M.

The degree of D.D.S. was conferred on the following graduates:

Joe Alexander.....	Mississippi.	L. B. McLain.....	North Dakota.
E. J. Anderson.....	Minnesota.	T. G. Martin.....	Kentucky.
S. L. Barron.....	Texas.	G. E. Mathews.....	Kentucky.
T. F. Bates.....	Tennessee.	S. E. May.....	Kentucky.
W. T. Beard.....	Kentucky.	J. D. Meade.....	Kentucky.
I. W. Beauchamp.....	Kentucky.	A. Meder.....	Kentucky.
J. C. Beck.....	Kentucky.	H. H. Mitchell.....	Kentucky.
D. C. Blackburn.....	Texas.	J. D. Mitchell.....	Missouri.
J. W. Blackburn.....	Kentucky.	H. G. Mount.....	Mississippi.
J. L. Brock.....	Alabama.	T. M. Nicholson....	Canada.
C. M. Butler.....	Mississippi.	T. H. Ragatz.....	Wisconsin.
J. C. Calhoon.....	Kentucky.	Raymond Reed.....	Colorado.
B. H. Cecil.....	Kentucky.	A. S. Reese.....	Kentucky.
W. F. Collings.....	Kentucky.	H. Richardson.....	Kentucky.
E. M. Crutchfield.....	Kentucky.	A. B. Russ.....	Mississippi.
L. L. Dailey.....	Indiana.	John Sayle.....	Mississippi.
W. H. Dear.....	Louisiana.	D. W. Seale.....	Mississippi.
C. W. Dorsey.....	Kentucky.	H. E. Seale.....	Mississippi.
A. M. Ericson.....	Minnesota.	J. T. Shapinsky....	Russia.
W. H. Felder.....	Texas.	B. W. Sidebottom....	Kentucky.
C. L. Gabbert.....	Indiana.	F. E. Smith.....	Texas.
F. H. Gordon.....	Maine.	G. C. Smith.....	Kentucky.
C. S. Grady.....	Kentucky.	G. T. Smith.....	Kentucky.
A. D. Graham.....	Indiana.	H. H. Smith.....	Mississippi.
O. E. Granger.....	Iowa.	R. P. Spurlin.....	Kentucky.
R. E. Grant.....	Kentucky.	B. M. Stainbrook....	Tennessee.
H. A. Hampton.....	Kentucky.	W. M. Stringer.....	Kentucky.
G. N. Harris.....	Texas.	R. J. Washington....	Alabama.
E. C. Hawkins.....	Minnesota.	C. D. Watkins.....	Kentucky.
C. E. Hoffman.....	Indiana.	G. E. Watkins.....	Kentucky.
W. A. Kerley.....	Texas.	A. F. Welcher.....	Indiana.
G. H. Kincaid.....	Texas.	W. W. Whitehead....	Mississippi.
B. B. Knolle.....	Texas.	T. M. Williams.....	Iowa.
H. H. McCullough....	Missouri.	G. N. Wyman.....	South Carolina.
J. T. McIntire.....	Kentucky.	W. A. Youngberg....	Minnesota.

## KANSAS CITY DENTAL COLLEGE.

THE twentieth annual commencement exercises of the Kansas City Dental College were held at Lyceum Hall, Kansas City, Mo., on Tuesday evening, April 29, 1902.

Prof. J. D. Patterson, president, conferred the degree of D.D.S. upon the following graduates:

Frank C. Banta.	Wilton M. French.	Chas. L. McGlasson.
Fred. W. Barber.	Frank D. French.	Arthur B. Ratcliff.
Solomon L. Bechtel.	Lauren R. Fritz.	Chas. F. Stewart.
J. Frank Buckley.	Charles P. Harris.	Claude Sydnor.
Dayton D. Campbell.	Geo. K. Hibbard.	Walter S. Vincent.
Mont. C. Carpenter.	Rea S. Hoagland.	James S. Walker.
Louis R. Danes.	Ellis D. House.	Franklin A. White.
Arthur R. Dildine.	J. Larken Howell.	George W. Wise.
J. Lone Enloe.	Fred. A. Koester.	Wm. A. Ring.
Hugo I. Felix.	James A. McDaniel.	

## PITTSBURG DENTAL COLLEGE.

THE annual commencement exercises of the Pittsburg Dental College were held in Carnegie Hall, Pittsburg, Pa., on Wednesday evening, April 30, 1902.

The degree of D.D.S. was conferred on the following graduates:

Austin James Artman.	M. Ross Gibson.	Joseph Roy Nelson.
James Craig Boner.	Ralph E. Hayes.	Jesse A. Pennington.
Leslie W. Brownfield.	J. Herbert Hess.	Jno. R. Proven.
Mark W. Blackburn.	Asa Waters Heyl.	James Byron Phillips.
Fred. C. Buterbaugh.	John Henry Hysong.	Frederick C. Robinson.
Walter B. Conaway.	George A. Jelley, Jr.	George S. Robison.
Samuel M. Crawford.	Leo H. Jackson.	Robert Clever Roy.
Merton E. Churchill.	J. Burt Kirk.	Albert Reichenbach.
Scott Harold Douthett.	Edward Duff King.	James Mercer Sugden.
Thomas A. Deeds.	D. Luther King.	George Francis Shade.
Charles Herbert Ellis.	W. Oran Linhart.	Sue Lewis Taggart.
J. S. Warren Frank.	Louis George Maier.	Walter C. Thompson.
M. John Freshwater.	James H. Moore.	Daniel H. Warren, Ph.G.
Francis A. Findley.	Frank R. Masters.	Frank Henry Wilson.
Daniel Gordon Giles.	Brainerd T. Mohney.	William P. A. Wiegeling.
Clarence S. Guckert.	Victor H. McAlpin.	John Walter S. Walker.
Harry Elton Grant.	Harvey A. McCandless.	James B. Wells.
	A. Winson McCullough.	

## DENTAL COLLEGE, OHIO MEDICAL UNIVERSITY.

THE tenth annual commencement exercises of the Dental College, Ohio Medical University, Columbus, Ohio, were held April 15, 1902.

The number of matriculates was one hundred and eighty.

The degree of D.D.S. was conferred upon the following graduates:

Albert E. Allen.	Edw. Q. Green.	Ira D. Seiler.
Anderson Bentz.	Frank L. Gruber.	Camillus W. Sheppard.
Karl C. Brashear.	Tunis R. Hane.	Judson G. Smith.
C. W. Brecheisen.	Calvin L. Haverfield.	Peter P. Sperry.
Alden Bush.	Harry E. Hawk.	Earl B. Sturgis.
Edgar R. Clure.	Gillette Hayden.	George E. Thomas.
John R. Cole.	Harry L. Irwin.	Elvin H. Thorpe.
Harry Conway.	Floyd B. Jones.	Floyd P. Travis.
Jas. E. Cramer.	Chas. F. Kull.	Joseph E. Wagner.
Roy J. Cunningham.	Thomas M. Lea.	John P. Warner.
Orvie E. Depoe.	Bud E. W. Lindsay.	James Welty.
Perlie L. Dew.	Fred. A. McAfee.	Edward C. West.
Jos. W. Early.	Joseph E. Martin.	Alfred T. Wiley.
John L. Ewalt.	Walter E. Newcomb.	Geo. A. Wilson.
Dye B. Gallogly.	Arthur W. Newell.	William R. Wright.
Roy P. Gillespie.	Elroy Rees.	Allen Zimmerman.
Emil A. Graf.		

## PHILADELPHIA DENTAL COLLEGE.

THE thirty-ninth annual commencement exercises of the Philadelphia Dental College were held in the Academy of Music, Philadelphia, on Friday evening, May 2d, at 8 o'clock.

The address to the graduates was delivered by Henry H. Boom, M.D., professor of chemistry and metallurgy.

The valedictory was delivered by Byron L. Rhome, D.D.S.

The degree of D.D.S. was conferred on the following graduates:

Charles H. Ale.....	New Jersey.	Francis X. Kernan...	Massachusetts.
Charles L. Alvord...	New York.	Lynford Lardner...	Wisconsin.
Pierre A. Amyot...	New York.	Juan Larrazabal....	Cuba.
George E. Baldwin...	New York.	Fred C. Lee.....	Nebraska.
Helen L. Bascom...	Connecticut.	John O. Lessig.....	Pennsylvania.
Arthur R. Baumann	Pennsylvania.	Henry D. Levy.....	Connecticut.
James O. Bearstler	Pennsylvania.	George R. Lindsay...	Canada.
Adrian M. Bourdon	New York.	Harry G. Longwell..	Pennsylvania.
Mary L. Bowen....	Pennsylvania.	Archibald B. Lowe..	Canada.
Samuel L. Bower...	Pennsylvania.	Joseph M. Mannix...	Pennsylvania.
John H. Brooks...	North Carolina.	Charles L. Marks....	Pennsylvania.
Cecil P. Brown....	Maine.	Archibald B. Mead...	Pennsylvania.
Fred. O. Browne...	Canada.	Axel Melson.....	Denmark.
Elwyn R. Bryant...	Quebec.	H. W. Mitchell.....	Maine.
Lyman H. Carter...	Pennsylvania.	Henry H. Mix.....	Pennsylvania.
Charles H. Chase...	New Hampshire.	Samuel L. Moak....	Washington.
Harry F. Clawson...	Pennsylvania.	Thos. G. Moody....	Canada.
Roy B. Colter.....	Canada.	James J. Muir.....	Australia.
James C. Colton...	Rhode Island.	John T. Muir.....	Australia.
Wm. H. Coogan...	Pennsylvania.	C. R. McAyeal.....	Oregon.
Donald S. Cormack	Australia.	G. C. McKinley....	Ontario.
Frank R. Courreges.	Louisiana.	Merton G. McLean...	Canada.
Harton A. Crisp...	Canada.	Wallace F. Naylor...	New Jersey.
F. H. Dammasch...	Oregon.	Allan D. Noxon....	Canada.
A. C. Deckman....	Canada.	D. W. O'Connor....	Massachusetts.
Wm. C. De Forest.	Pennsylvania.	Samuel Oglesby....	Pennsylvania.
Hugh I. De Groot...	New York.	E. S. Osterbanks...	Connecticut.
Walton V. Dixon...	Canada.	Edwin E. Payne....	California.
Alice M. Doering...	Canada.	Henry H. Phillips...	Ohio.
Margaret Donohoe	Ohio.	C. J. Ramsay.....	Connecticut.
C. D. Estabrook...	Maine.	Harry A. Reese.....	Pennsylvania.
L. de Fernelmont...	Netherlands.	Charles J. Reid....	Canada.
Orm Fetterly.....	New York.	Byron L. Rhome....	Brazil.
James Firth.....	Pennsylvania.	John H. Robison...	Colorado.
Clarence S. Fleck...	Pennsylvania.	Harry C. Roff.....	Connecticut.
E. R. Follick.....	Canada.	Louis R. Schmutz...	Pennsylvania.
A. V. K. Foote....	New York.	J. W. Seltzer.....	Pennsylvania.
Eugene A. Fuller...	Pennsylvania.	E. L. Sheldon.....	Massachusetts.
L. Leslie Fuller...	Canada.	W. P. Shirreff.....	Canada.
Frank H. Genung...	Connecticut.	J. W. Simpson.....	Florida.
George C. Greene...	Massachusetts.	Wm. S. Taylor.....	Pennsylvania.
George H. Greene...	Rhode Island.	T. G. Thompson....	Canada.
R. L. Hamaker....	Pennsylvania.	W. I. Thompson...	New Jersey.
Edward J. Hayes...	Maine.	P. E. Thomson....	North Dakota.
Clifford J. Hill....	Connecticut.	Frank C. Totten...	New Jersey.
M. S. Hillerson...	Russia.	T. N. Toumey.....	New York.
J. T. Howard.....	Pennsylvania.	John T. Turley....	Nebraska.
Diego E. Hurtado...	Cuba.	Charles S. Tuttle...	New Jersey.
Oscar H. Hyman...	Australia.	P. H. Vandervoort...	Canada.
Robert H. Hyman...	New York.	R. H. Walter.....	Oregon.
Stanley Ironside...	New Jersey.	George E. Wanberg...	Iowa.
Sarah G. Jackson...	New Jersey.	R. F. Wendling....	Oregon.
Basil R. Jones....	Australia.	Wm. A. Wenner....	Pennsylvania.
Franklin E. Jones...	Pennsylvania.	Francis A. Werner...	Pennsylvania.
Curt O. H. Kayser...	Germany.	Ernest J. Winans...	New York.
Wm. E. Kelly.....	Pennsylvania.	Irving Winter.....	New York.
John W. Kenney...	Massachusetts.	John P. Yocum.....	Pennsylvania.



## UNIVERSITY OF TENNESSEE, DENTAL DEPARTMENT.

THE annual commencement exercises of the Dental Department of the University of Tennessee were held in Watkins Hall, Nashville, Tenn., on Tuesday evening, May 6, 1902.

The degree of D.D.S. was conferred on the following graduates:

J. T. Campbell.....	Mississippi.	James G. Morris.....	Texas.
J. Thomas Cooper.....	Texas.	Malcolm Neel.....	Arkansas.
James R. Dorbandt.....	Texas.	Edw. S. Richards.....	Tennessee.
Will D. Ferrell.....	Tennessee.	V. L. Shepard.....	Indiana.
Paty L. Guffin.....	Tennessee.	Sidney F. Smith.....	Kentucky.
Burrel F. Hall.....	Georgia.	Connie M. Stanfill.....	Tennessee.
Nile J. Hoover.....	Tennessee.	Oscar F. Staples.....	Alabama.
Orem C. Ingram.....	Mississippi.	Elbert Stewart.....	Arkansas.
A. Lee Massey.....	Arkansas.	Chas. S. Vaught.....	Mississippi.
F. R. Maxwell.....	Texas.	N. N. Woodward.....	Tennessee.
Robt. J. McGavock.....	Tennessee.	C. Currin Woolard.....	Tennessee.
Robt. H. McGraw.....	Mississippi.	Frank Wiggins.....	Tennessee.
C. Elmer Meyers.....	Arkansas.	James R. York.....	Arkansas.
Allan J. Moore.....	Tennessee.		

## KEOKUK DENTAL COLLEGE.

THE annual commencement exercises of the Keokuk Dental College were held in the Opera House, Keokuk, Iowa, Monday evening, April 14, 1902.

The doctorate address was delivered by Burton L. Thorpe, D.D.S., St. Louis, Mo., and the valedictory by J. C. Black, D.D.S.

The degree of D.D.S. was conferred on the following graduates:

John C. Black.....	Iowa.	Lester B. Hobbs.....	Illinois.
John W. Babb.....	Iowa.	Elwood Jacobson.....	Iowa.
Joseph D. Chenoweth....	Iowa.	Martin Long.....	Missouri.
Martin Dewey.....	Kansas.	Frank M. McClurg.....	Iowa.
J. E. Forney.....	Kansas.	John W. Reblitz.....	Wisconsin.
H. E. Hurst.....	Iowa.	John L. Riniker.....	Iowa.
Harry E. Hewitt.....	Missouri.		

## BALTIMORE MEDICAL COLLEGE, DENTAL DEPARTMENT.

THE seventh annual commencement of the Dental Department of the Baltimore Medical College was held in Lehman's Hall, Baltimore, Md., on Thursday, May 1, 1902.

The degree of D.D.S. was conferred by Professor J. D. Blake, president of the faculty, on the following graduates:

Clarence W. Beachy.....	Maryland.	Ambrose Macneil... ..	Massachusetts.
Oscar S. W. Book.....	Pennsylvania.	A. F. McCann, Jr... ..	Massachusetts.
W. A. Childs.....	Massachusetts.	James F. McGee... ..	Massachusetts.
F. P. Cunningham.....	Massachusetts.	Jos. N. Meyers... ..	Pennsylvania.
T. F. Dalton.....	Massachusetts.	C. O. F. Miller... ..	Connecticut.
Joseph P. G. Davis.....	Bermuda.	Geo. C. Nichols... ..	Maine.
Carl G. Dinger.....	Pennsylvania.	Albert C. Patterson.....	Vermont.
Leslie S. Edwards... ..	Vermont.	J. N. Platt... ..	Massachusetts.
Raymond S. Elmer.....	Vermont.	John H. Russell... ..	Maryland.
W. H. J. Fingleton.....	Massachusetts.	Beverly Sproul... ..	New Brunswick.
Harry J. Fleming... ..	New York.	James E. Taft... ..	Pennsylvania.
Chas. T. Greene... ..	Massachusetts.	Carleton Vaughan... ..	Dist. of Columbia.
Martin M. Lally... ..	Massachusetts.	Franz Winter, Jr... ..	Maryland.

## BALTIMORE COLLEGE OF DENTAL SURGERY.

THE sixty-second annual commencement exercises of the Baltimore College of Dental Surgery were held at Chase's Theater, Baltimore, Md., Tuesday evening, April 29, 1902.

The valedictory was delivered by Albert L. Alexander, D.D.S.

The degree of D.D.S. was conferred upon the following graduates:

J. M. Adams.....	Georgia.	F. Lautenbach, Jr..	Maryland.
A. L. Alexander....	Alabama.	G. A. Lynch.....	Connecticut.
R. H. Bath.....	Canada.	DeR.M.J.J.Marlier.	Holland.
J. N. Bagwell.....	Maryland.	H. A. Mack.....	Connecticut.
O. W. Barton.....	Virginia.	O. B. Moore.....	New Brunswick.
Miss B. B. Bennett.	Maryland.	H. B. McCuskey...	West Virginia.
E. W. Bickford....	Maine.	J. A. McMurdo....	Prince Edward I.
D. M. Biggs.....	Maryland.	J. L. McNay.....	Pennsylvania.
E. L. Boone.....	Alabama.	W. E. Neff.....	Connecticut.
F. J. Boyce.....	Pennsylvania.	C. S. Oates.....	Massachusetts.
J. E. Boivin.....	Canada.	W. C. Oxner.....	Canada.
J. T. Boyd.....	Alabama.	J. L. Piper.....	Massachusetts.
E. H. Brown.....	Jamaica.	J. A. Percy.....	West Virginia.
J. D. Burt.....	New York.	C. A. Porter.....	Massachusetts.
G. A. Carr.....	North Carolina.	W. A. Robbins.....	New Jersey.
J. W. Carmody....	Massachusetts.	E. E. Robins.....	Prince Edward I.
M. Cessna.....	Pennsylvania.	C. Schuetz.....	Maryland.
T. J. Corbett.....	Connecticut.	T. W. Sewell.....	Georgia.
L. W. Crosby.....	Connecticut.	A. H. Shaw....	Jamaica.
P. A. Dixon.....	North Carolina.	G. G. Shoemaker...	Maryland.
W. C. Drakeford..	Alabama.	C. B. Shoemaker...	Pennsylvania.
J. L. Elphenstone...	Scotland.	H. T. Smith.....	Canada.
I. V. Gregory.....	Germany.	J. G. Sowers.....	Maryland.
H. L. Gall.....	Maryland.	G. E. Sutphin.....	West Virginia.
W. A. Hayes.....	North Carolina.	L. B. Tearney.....	Maryland.
W. L. Hazlett (dec.)	Pennsylvania.	F. J. Tierney.....	Massachusetts.
D. N. Hicks.....	North Carolina.	J. D. V. Thomas...	Java.
C. A. Hickman.....	Texas.	E. C. Thompson...	Minnesota.
F. C. House.....	Pennsylvania.	W. C. Trimble....	Alabama.
R. B. Jamieson....	Prince Edward I.	B. T. Vermillion...	West Virginia.
H. B. Johnston....	New Jersey.	W. Weichselbaum..	Georgia.
C. W. Kelly.....	Canada.	O. J. Whipple.....	Georgia.
W. F. Landau.....	Germany.	C. D. Williamson..	West Virginia.
W. H. Lausten.....	Ohio.		

## UNIVERSITY OF OMAHA, DENTAL DEPARTMENT.

THE seventh annual commencement of the Dental Department of the University of Omaha was held at the Kountze Memorial Church, Omaha, Neb., Wednesday, April 30, 1902.

The degree of D.D.S. was conferred on the following graduates:

Malcolm A. Akin.....	Nebraska.	Glen E. LeMar.....	Nebraska.
Frank M. Barnes, M.D....	Nebraska.	Claude P. Lewis.....	Iowa.
Frank J. Chollette.....	Nebraska.	Roy D. Morris.....	Nebraska.
Edw. P. Cressler.....	Nebraska.	C. LeR. Sample.....	Nebraska.
Otto A. Gsanter.....	Nebraska.	Wm. L. Shearer.....	Nebraska.
Homer R. Hatfield.....	Nebraska.	Julius C. Soukup.....	Nebraska.
Richard C. Houston.....	Nebraska.	Albert P. Taylor.....	Nebraska.
Marcus L. King.....	Nebraska.	Chas. R. Trenholm.....	Wyoming.

## UNIVERSITY OF ILLINOIS, SCHOOL OF DENTISTRY.

THE first annual commencement exercises of the College of Dentistry, University of Illinois, were held at Steinway Hall, Chicago, on Saturday, May 3, 1902.

The doctorate address was delivered by Rev. L. A. Crandall, D.D.; the valedictorian was Carroll Breed Abbott, D.D.S.

The degree of D.D.S. was conferred on the following graduates:

Carroll B. Abbott.	Aaron J. Dubin.	John R. Murphy.
Harry W. Adams.	Alfred H. Fales.	Robt. J. McGinnis.
Arthur E. Alther.	A. F. Flachtemeier.	Claud DeF. Owens.
Arthur L. Atwood.	John C. Granger.	William L. Ruzickin.
Louis E. Bake.	Harry W. Grubb.	Ray N. Rork.
Arthur C. Bawden.	David R. Hawes.	Charles V. Rice.
H. W. Benson, B.S.	Charles W. Hillier.	Fred'k H. Ratcliff.
James C. Black.	William W. Homan.	Martin J. Ruzicka.
Francis M. Carl.	Ernest B. Kelly.	Charles H. Tigner.
Walter P. Cameron.	Ferd. H. Lichtenberg.	Devello E. Taft.
Rollo G. Chamberlin.	Frank R. Merz.	Marie R. Urbanek.
Ernest G. Cummings.	Jay L. Means.	Alvin S. Wasser.
Charles L. Daniels.	John M. Murphy.	William J. Walk.
R. P. Donaldson.		

## CHICAGO COLLEGE OF DENTAL SURGERY.

THE twentieth annual commencement exercises of the Chicago College of Dental Surgery (Dental Department of Lake Forest University) were held in the Illinois Theater, Chicago, on Tuesday afternoon, at 2.30 o'clock.

The faculty address was delivered by Hart J. Goslee, D.D.S.; the doctorate address by M. Bross Thomas, M.A. An address was also made by Wm. M. Lawrence, D.D.

The degree of D.D.S. was conferred on the following graduates by Truman W. Brophy, M.D., D.D.S., LL.D., president of the college:

Randolph Arnold.	Rolla O. Crouch.	George H. Coram.
Ralph L. Ankeny.	Cleon Dea Collar.	John J. Cooper.
Frank C. Aubrey.	Charles O. Campbell.	Louis G. De Armand.
David W. Adams.	Paul Clarke.	Hugh P. Dorsey.
Frank W. Alexander.	Robert F. Campbell.	Melle deBoer.
Irat J. H. Atkinson.	Edgar N. Collins.	Jelle deWaard.
Paul H. Atwood.	Clement A. Cook.	Charles R. Dutcher.
Lewis G. Albright.	William D. Carroll.	John M. Donahoe.
Herbert W. Baker.	John S. Conley.	Charles A. Davis.
William H. W. Ball.	Rollin P. Culver.	Frank A. Dean.
William R. Brooks.	Robert E. Cockrell.	John W. Doran.
Claud W. Bandy.	Leon W. Cook.	John D. Donahoe.
William Bogie.	Paul C. Curran.	Arthur N. Davis.
William E. Blair.	Claude C. Clemens.	Henry G. Dressel.
Thomas Budge.	Clifford F. Clark.	Herbert S. Donaldson.
Frank E. Blanchard.	Carl M. Cahill, Ph.G.	Rollin O. Dickson.
Paul A. Betty.	Frank G. Conklin.	Roscoe A. Day.
Roy W. Bingham.	Fred E. Corliss.	Arlington J. Evans.
Guy E. Bailey.	William H. Carl.	Don W. Evans.
Emanuel Cutrera.	Carl J. Christopher.	Arthur Edwards.
Morris E. Corley.	Fred D. Campbell.	Linden L. Eells.
James Cannane.	John A. Craver, Ph.G.	William F. Ferstenberg.
Guy R. Churchill.	Guy F. Corley.	Asa Fee.



Frederick W. Groffman.	John E. McLaughlin.	Arthur P. Rutherford.
William S. Goldsmith.	Peter Moe.	Owen L. Rea.
Otto A. Goetz.	George P. Morris.	August J. Schrupf.
Charles B. Girard.	Harry G. Morgan.	Chester W. Sowles.
Alfred W. L. Gilpin.	Lora C. Milliken.	Wm. F. Schmeckebier.
Paul H. Geiger.	Thomas M. Mott.	Albert F. Schaefer.
Louis E. Golding.	Charles A. Maher.	James L. Summers.
Willis L. Gregg.	William D. N. Moore.	Frank W. Sutton.
Alvin Grefe.	William A. Millyard.	Harold O. Scott.
Robert L. Graber.	Walter J. C. Morton.	George E. Stevenson.
William L. Gillette.	Richard S. Moye.	George W. Spears.
Joseph H. Greenfield.	Raymond C. Mathis.	James L. Scott.
William P. Gasser.	Stanley S. McMillan.	Philip H. Sheridan.
Warren H. Hixon.	Charles A. Marshall.	Adam R. Speer.
William M. Haller.	Franklin G. Myers.	Charles H. Stone.
Joseph F. Holland.	John J. Maloney.	Wesley M. Shaw.
Gustave J. Henneman.	John A. Niles.	Noyce B. Smith.
Homer C. Hamilton.	V. Simpson Nevius.	Clarence O. Simpson.
Martin V. Havel, Ph.G.	Joseph P. Norton.	Carl F. Schultz.
Malcolm H. Holbrook.	James F. Nelson.	Glenn S. Soseman.
Maximilian T. Huber.	Leo A. Neil.	Robert L. Skinner.
John L. Helmer.	Clinton A. Nixon, Ph.G.	John A. Steele.
Milo O. Hunter.	Robert B. Orr.	Silas N. Stevens.
Percy C. Howland.	John G. Ohlwein.	Owen B. Smith.
William A. Herrmann.	William E. O'Keefe.	Harry S. Sherman.
Philip A. Helmer.	Thomas M. O'Connor.	John H. Tuttle.
Abel Hanson.	Frank C. Perl.	Charles C. Turner.
Thomas J. Holmes.	Albert E. Phillips.	James A. Townsend.
Walter R. Hurd.	Richard Purdum.	Samuel C. Thrift.
Victor Hitz.	Elmer G. Peterson.	Ruthven B. Ticknor.
Benjamin P. Hallam.	Leslie E. Pitcher.	Arthur M. Tummel.
John T. Isaachsen.	Emil Perl.	John A. Vasumpaur.
Robert Jasmann.	Thomas A. Penhallegon.	Anton Vold.
Edward Jacob.	Herman B. Pierick.	William J. F. Wilkie.
James B. Johnstone.	Pliny G. Puterbaugh.	Harry M. Wettengel.
Carl S. Jones.	Harris Popplewell.	Andrew B. Walker.
Arthur M. Kile.	Francis J. Quinn.	Edwin F. Wagner.
John W. Kelly.	Charles E. Rector.	Franklin S. Waite.
Ralph E. Kanouse.	Orie J. Raffety.	Frank M. Wells.
Charles F. Kenward.	Fred E. Raiche.	Otto E. Worthington.
Robert J. Lamme.	Lloyd E. Rubert.	David P. Wheeler.
Samuel E. Linsley.	James W. Roper.	Arthur C. Wherry.
Edward E. Loftus.	Earl L. Read.	George D. Wilcoxon.
Murdock F. McRae.	Fred J. Ryder.	Frank Zbornik.
Jerry V. McKee.	William D. Rockwell.	Emil R. Zanglein.
Joseph M. McEvoy.	Bruno J. Reck.	

### NEW YORK COLLEGE OF DENTISTRY.

THE thirty-sixth annual commencement exercises of the New York College of Dentistry were held at Carnegie Hall, New York city, on Monday evening, May 19, 1902.

The address to the graduates was made by Rev. Geo. R. Van de Water, D.D., and the valedictory by Robert Barclay Ludington, B.S., D.D.S.

The degree of D.D.S. was conferred on the following graduates:

Henry F. Albanesi <sup>us</sup> .....	New Jersey.	R. B. Ludington, B.S....	New York.
Harry W. Banta.....	New Jersey.	Gustav A. Manney.....	New York.
Arthur W. Barber.....	New York.	Wm. S. McClellan.....	New Jersey.
William J. Beissel.....	New York.	Richard J. Morg.....	New York.
John L. Courrier.....	New Jersey.	Lawrence Mundy.....	New Jersey.
Percy D. Daly.....	New York.	Charles Nathan.....	New York.
Wm. W. Douglas.....	New Jersey.	Otto Nauen.....	New York.
Paul B. Engel.....	New York.	Arthur V. Prentis.....	Connecticut.
Bernard W. Fischer.....	New York.	Arthur McC. Quinn....	New York.
Edward W. Fischer.....	New Jersey.	Leo H. Robinson.....	New York.
Harry A. Foster.....	New York.	J. M. Sinsheimer.....	New York.
John Franck.....	New York.	John Skillen.....	New York.
James H. Freile.....	New Jersey.	John E. Skillman.....	New York.
Harry E. Fry.....	New York.	Leon J. Solow.....	New York.
Sven Gertzon.....	New York.	William H. Specht....	New York.
Hugo A. Geyer.....	New York.	Simon Sternfield.....	New York.
Henry Greenbaum.....	New York.	George F. Steen.....	New York.
Albert N. Greminger....	New York.	James E. Sullivan.....	New York.
Isidor Hirschfeld.....	New York.	W. W. Thompson.....	Pennsylvania.
Horace B. Holmes.....	New York.	Alfred W. Viney.....	New York.
George F. Keefe.....	New York.	Walter S. Watson.....	New York.
Max C. P. Koch.....	New York.	Ross Wilkinson.....	New York.
Richard Kohn.....	New York.	Edw. A. Woodman....	New York.
Jean B. J. Ladoux, A.B..	New York.	G. H. Zimmerman.....	New York.

### LINCOLN DENTAL COLLEGE.

THE second annual commencement exercises of the Lincoln Dental College of Cotner University, of Lincoln, Neb., were held on Wednesday, April 16, 1902.

The doctorate address was delivered by J. F. Stevens, M.D.

The degree of D.D.S. was conferred by Chancellor W. P. Aylesworth on the following graduates:

Elizabeth C. Field, B.A....	Nebraska.	Earl R. Truell.....	Nebraska.
Larsh S. Gilman.....	Nebraska.	Lloyd B. Waggoner.....	Nebraska.
Wm. H. Linn.....	Nebraska.	Wm. A. Woodward.....	Nebraska.
Geo. W. Masters.....	Nebraska.		

### EDITORIAL.

#### THE DEVELOPMENT OF DENTAL LITERATURE.

ABOUT a decade ago the then editor of a prominent dental journal, having arrived at the pessimistic conclusion that about all that dentistry contained had been exploited in our literature, stated editorially that "the profession was largely written out." He was probably short on copy with nothing available in sight for the next issue, as so hopeless a view even at that period could scarcely arise from a fair knowledge of the actual situation. The sentiment quoted may, however, have received some coloring from the fact that the point of view at that period with reference to the problems

of dentistry was markedly different as compared with that of the present time. Then the number of scientific workers in our ranks was comparatively few and the interest was centered in the development of the practical procedures of our calling rather than in its scientific basis. The period was markedly a transitional one in which preparation was being made for a new interest and a new mental attitude with respect to the conception of what really constitutes dentistry. A knowledge of dental art was found to be inadequate for successful practice without a deeper insight into the scientific data upon which the art was based, and the need for more light expressed itself in a general demand for enlarged curricula, more time in the preparation of students, and more adequate equipment for practice.

Response to this demand served as a stimulus to research by which alone the need for scientific knowledge could be met. The whole tone of our literature has been undergoing a marked change, and its volume has tremendously increased. Writers of a decade ago no longer furnish the larger proportion of the literary output in dentistry; hosts of new names appear in our journals as periodical contributors; so that instead of being "largely written out," we are but in the initial stage of an era of scientific research and exactitude, and are opening up the way to larger fields of inquiry which will be rich mines of scientific and literary wealth for the future.

A fairly accurate conception of the growth of the dental literary output in the past decade may be had by a study of the "Monthly Bibliography of Dental Literature" which has appeared in each issue of the DENTAL COSMOS during that period. In the beginning the record of the world's dental literary output scarcely averaged two pages of our text. In 1895 the increase was but slight. During the current year the monthly average has been about four pages, while in the present issue almost six pages are required for the publication of the record, with a notable proportionate increase in the number of text-books and standard works. This showing, we think, will fully refute the idea that "the profession is largely written out," and tend to show that general increase of interest in scientific study is developing a large body of new writers upon a different class of themes.

The essential reason for this improved state of affairs is not far to seek: the attitude of the dental student of the present with respect to professional practice is upon the whole quite different to that of his predecessors of a decade ago. Dentistry as now taught requires a mind differently trained for the comprehension and assimilation of its basal principles. The mere memorizer of data who crams for



the final examination, if perchance he reaches that goal, stands but small chance of success as compared with him who has developed a trained reasoning faculty. The higher entrance standards are selecting a better grade of student, but in addition to that factor the disciplinary character of the course of professional study, quite apart from its features of technical training, educates the intellectual faculties and the power of logical reasoning to a degree that under the older plan of dental education was impossible.

The necessity for a system of training which shall enable the practitioner to recognize and rationally treat oral and dental lesions other than those which are essentially prosthetic in their therapeutics, requires that the student shall first be an accurate diagnostician; he must know his case before he can successfully treat it, and to be a diagnostician he must be able to see, observe, and give due weight to all the factors which the case presents, and upon these by logical reasoning base his interpretation of the disorder and perfect his plan of treatment. The growth of scientific research in dentistry is a practical attempt to discover, collate, and present in accessible form the data upon which may be based a system of dental education adequate for the demands made upon the dentist as a practitioner.

We are fully aware that the point of view here presented is open to the criticism that a large proportion of graduates even now are merely empirics, and will continue to be so as practitioners. The proportion is, however, less now than heretofore, and no student can to-day graduate from a reputable dental college without having been impressed in a considerable degree by the influence which the scientific features of his course of study have brought to bear upon him. On the other hand, the majority will be guided and controlled by the scientific motive throughout their professional lives. By this we do not mean that the majority of future graduates will devote themselves to dental scientific research, but we do mean that the increasing appreciation of the value of precise study of the phenomena concerned in the practice of dentistry constitutes a change of professional point of view which is bringing dentistry into parallel relationship with the existing status of medical science and developing a class of rational practitioners.

If our view be correct, the profession is not "written out," and the outlook for a healthful growth in our literature, both as to quality and quantity, is most encouraging. We may expect less of diffuse guessing and more of precise observation in the literary output of the future.

## SIALO-SEMEIOLOGY.

DURING the publication of the report of the Third International Dental Congress we gave in abstract a brief *résumé* of the work of Dr. J. P. Michaels, of Paris, on pathological saliva and its significance as a diagnostic factor in the detection of certain abnormal conditions of nutrition. The full report constituted a communication by the author to the Paris Congress which was of so voluminous a character as to preclude its entire publication in our pages.

Realizing, however, the great importance of the subject and the growing interest aroused by the brief abstract which we published in the December COSMOS of 1900, and further because of many requests for the unabridged paper by Dr. Michaels, we have concluded to prepare and issue, to COSMOS subscribers only, a separate publication of the paper in question. To that end we have in preparation for the press an authorized complete translation of Dr. Michaels' paper fully revised and corrected by the author. A copy of the essay in pamphlet form will be forwarded without charge to any COSMOS subscriber who applies for it. It is expected that the pamphlets will be ready for delivery at an early date, and applications for them will be filled in the order of their receipt by the publishing department of the DENTAL COSMOS.

---

BOOKS RECEIVED.

Fédération Dentaire Internationale. Published by E. Sauvez and Maurice Roy, Paris, 1902.

Compte-rendu sommaire des Travaux de la Fédération Dentaire National Française, sessions de Paris et d'Ajaccio (1901 et 1902). Paris, 1902.

Report of the Dental Commissioners of Connecticut. Meriden, Conn.: The Journal Publishing Co.

Text-Book of Dentistry. Vol. I. Edited by Dr. M. Chiwaki, President of Tokyo Dental College, and Dr. T. Okumura, Professor in Tokyo Dental College. Misakicho, Tokyo, 1902: Tokyo Dental College.

Proceedings of the Academy of Natural Sciences, Vol. LIII, Part 3. Edited by Edward J. Nolan, M.D. Philadelphia, 1902.

Answers to Questions Prescribed by Dental State Boards. By Robert B. Ludy, M.D.

Notes on Materia Medica, Pharmacology, and Therapeutics.  
By Douglas Gabell and Harold Austin.

Principles of Bacteriology. By A. C. Abbott, M.D. Sixth Edition.

Diseases and Injuries of the Teeth, Including Pathology and Treatment. By Morton Smale and J. T. Colyer.

---

## DENTAL LEGISLATION.

---

### ARKANSAS STATE DENTAL LAW.

AN ACT TO REGULATE THE PRACTICE OF DENTISTRY IN THE STATE OF  
ARKANSAS.

*Be it enacted by the General Assembly of the State of Arkansas:*

SECTION 1. It shall be unlawful for any person to practice or attempt to practice dentistry or dental surgery in any county in this state without first having received from the board of dental examiners a certificate of his qualifications and fitness to do so, and caused same to be recorded in the office of the clerk and recorder of such county.

SEC. 2. A board of dental examiners consisting of five (5) reputable practicing dentists of this state, recommended by the State Dental Society, to be appointed by the governor and to hold their offices for the term of two (2) years and until their successors are appointed and qualified, is hereby created.

SEC. 3. The governor shall appoint said board upon the passage of this act, and the members so appointed shall meet without unnecessary delay and organize by electing from among their members a president, secretary, and treasurer, and they and their successors shall thereafter hold annual meetings and shall meet as much oftener on the request of the president as they may deem necessary.

SEC. 4. It shall be the duty of said board to examine all persons who apply to them for license or certificate to practice dentistry, and to issue certificates of qualification to all such applicants therefor as are reasonably well qualified to engage in such practice of dentistry, and to refuse certificates to such as are not qualified, whether the applicant has a diploma or not. Provided, that any person not now permitted to practice dentistry in this state shall be required to stand an examination before said board before they shall be allowed to practice under this act.

SEC. 5. If the applicant presents a diploma from a reputable college of dentistry, it shall not be necessary for the board to specially examine him, but they may do so, and must if they doubt his qualification.

SEC. 6. It shall not be necessary for any person now holding a certificate under the present or any previous board of dental examiners of this state to undergo a further or additional examination.

SEC. 7. This act shall not be construed to prevent the extraction of teeth by practicing physicians, nor by students of dentistry studying or assisting



in the office or work of any regular practicing dentist under his immediate supervision.

SEC. 8. In the intervals between the several meetings of the board, the president may, at the request and on the recommendation of the other members of the board, examine applicants and issue or refuse certificates with the same effect as though the same were done at a regular meeting of the board.

SEC. 9. Each applicant shall, on or before filing his application, pay to the treasurer the sum of five dollars (\$5.00) as a fee for his examination, take his receipt therefor and file it with the secretary, who shall endorse the fact upon his application, whereupon the application shall be presented either by the secretary or the applicant to the board or president as the case may be, and the fees so received shall be used for the expenses and only compensation of the board.

SEC. 10. The fee for recording such certificate, to be paid by the holder, shall be one dollar (\$1.00).

SEC. 11. For every violation of this act, the offender upon conviction shall pay a fine of not less than five dollars (\$5.00), nor more than twenty-five dollars (\$25.00), and every day of engagement or attempted engagement in such illegal practice shall be deemed a separate offense. All fines assessed and collected under this act shall be paid into the common school fund of the district in which the offense is committed.

SEC. 12. It shall be the duty of the several prosecuting attorneys of the various circuits of this state to institute, on notice from any member of the board, prosecutions by information or otherwise against such persons as violate the provisions of this act in their respective circuits.

SEC. 13. All laws and parts of laws in conflict with this act are hereby repealed and this act shall be in force and effect from and after its passage.

*Approved May 23, 1901.*

---

## OBITUARY.

---

### DR. BENJAMIN LORD.

DIED, at New York, May 3, 1902, of pyemia, Dr. BENJAMIN LORD, in his eighty-third year. He was born August 21, 1819, at Trenton, N. J.

Half a century ago Dr. Lord, at the age of only a score and a half, was a dentist of high repute in New York, having his office and residence at a corner of Fourth Street and Washington Square. At that time and place the writer, by invitation, became his pupil and a member of his family. Dr. Lord's pupilage was with his oldest brother, Dr. Wm. G. Lord, a well-known dentist of Newark, N. J., and his entrance upon dental practice was in New Brunswick, N. J., but subsequently he established himself in New York and continued in practice without other than incidental vacations, until last December, when he accidentally slipped down over the lower three steps of the basement stairs; the fall broke two ribs, but early in January he was again ready for office duty, for he was an indomitable enthusiast, in love with his profession. A casual cold, however, soon resulted in a pleuritic attack, upon which supervened a dorsal abscess resulting in his death on Saturday

morning, May 3, 1902, at the home and office, 34 West Twenty-eighth Street, which he had owned and occupied for more than thirty years.

First of all it is to be said that from early manhood he was that noblest work of God, a Christian gentleman. As church-member, husband, father, friend, and patriot, he was faithful and sedulous in the performance of duty. He was exceptionally pure in conduct and speech. His manly vigor was manifest in a life of more than fourscore years, yet one may be sure that among many men associates none ever noticed act, look, or word that would be improper in the presence of a lady or gentleman.

His office manners were courteous, kindly, and clean. Examinations and operations invariably were prefaced with the napkin; direct lip-contact with finger or instrument he deemed indelicate. Indeed his napkining for protection, illumination, and saliva-exclusion was remarkable, it being improbable that he ever used rubber dam or clamp. In fact all modern mechanical aids were disapproved by him.

His chair, specially designed by him, was of wood, very simple and rigid; a series of separate cushions serving for changes in seat positions; the head positions being also variable upon a broad, long, nearly flat cushioned and adjustable attachment, which served also for an arm-rest. The foot-rest was a series of carpeted wood steps, and the spittoon a vase set on the flat top of a simple stand. A small marble-top case, having a series of side and endwise shallow drawers for instruments and foils, with a supplemental case of drawers for napkins, medicaments, etc., completed the office furniture for strictly operative service. But a little distance to the rear of the instrument-case was a small laboratory case whereat with anvil, lamp, hammer, files, and water-cup he could fashion, harden, and temper excavators and chisels that excelled all others in persistent sharpness of edge, and had strength in the elasticity of the long slender shanks. His plugger-points were also exceptionally strong and springy. He claimed that the curves and flexibility of the shanks and shafts of instruments effect more power, more ease and grace in the hand, and better adapt them for reaching all parts of cavities. He used only soft foil in ribbons immediately formed from half-sheet length strips by folding with the blade of very long scissors on a napkin.

He had soft and supple fingers with a strong grip and a free-hand action that made the excavator or plugger shank and shaft sway in a willowy way, but the point would be surely placed and guided without risk of slip or break; his complete freehand operative control causing astonishment in the rarely privileged observer. Cavity preparation and filling were therefore both thoroughly and expeditiously done, under dry conditions because of expert napkining.

His soft gold fillings were most carefully yet quickly finished by original condensers, trimmers, and burnishers,—results made feasible by properly shaped cavity margins.

Tin foil was a favorite and expertly used material; he also used amalgam for large contour fillings.

In a late interview he was enthusiastic over the addition of a single filament of tin foil folded in with the strip of gold foil in forming a ribbon of whatever width. He declared that the ribbon was manipulatively improved by the relatively minute tin addition, and that the consequent less conspicuous hue, and subsequent hardening of the filling by a process of crystallization were of a surprising character and permanent value. This

incident emphasizes the fact that his tactile sense was so refined at the plugger point as, like a tactometer, to indicate the slightest fluctuation in the behavior of a soft foil. This was also evidenced in his way of picking a ribbon from the napkin and placing it in the cavity to start, or build a filling, without the slightest displacement of foil from the instant of leaving the napkin to the release from the plugger-point at the exact situation for which the master hand designed it; no foil pliers, no retaining pits, and no left hand assistant plugger being required.

The engine, hand-piece, and buzzing bur were not delicate enough to suit the manipulative artistry of this achieving advocate of simple and sensitive means in the skilled hands of a self-poised sympathetic dental operator. He was the despair of the instrument-maker who sought to reproduce his instruments from patterns and personal explanations. The acuteness of his vision and sense of fitness and fineness of forms discerned defects and differences in the designed duplicates that made them in his hand diverse from his originals. His sickle-shaped scalers in various styles were long since adopted as standards, and his small forceps, made from his designs by Morson, were unique in beak form and fit.

He was early an active member in the several local dental societies: a president of the New York Odontological Society, first president of the Institute of Stomatology, member of the First District Dental Society of New York, the New York Academy of Sciences, the New York Historical Society, the Association for the Advancement of Science, the Museum of Natural History, the Quill Club, the Young Men's Christian Association.

In every sphere of social activity he behaved "gently in the manner, firmly in the act." Indeed, he was in all ways most amiably positive and unflinchingly courteous in the performance of private, professional, and public duties as God gave him to see them.

A recent and admirable photographic likeness appears as a frontispiece to this number of the DENTAL COSMOS.

W. STORER HOW.

---

### DR. CASSIUS M. RICHMOND.

WE learn through the columns of the *New York Herald*, under date of May 15th, that Dr. CASSIUS M. RICHMOND, prominently connected with the Richmond Tooth Crown Company, died at Clarksville, Va., May 13, 1902.

Dr. Richmond was born in Burton, Ohio, 1835, his father being a surgeon in the regular army. He was of a distinctively inventive turn of mind; his improvements in connection with dentistry being well known. His inventiveness, however, found expression in a number of lines not connected with dentistry. He had for the past ten years been at work upon an airship of his own design, and which it was his intention to exhibit at the St. Louis Exposition. He had already obtained many patents upon it, both in America and Europe.

Dr. Richmond became the victim of an attack of grippe last autumn, which developed into asthma, and finally into pneumonia, which terminated fatally, as above noted.

Dr. Richmond was the last survivor of the three principal promoters of the Richmond or International Tooth Crown Company, his associates, Dr. A. S. Richmond and Dr. L. T. Sheffield, having died previously, the latter



as recently as September, 1901. In New York city, twenty-one years ago, these three men were the originators of the Richmond Tooth Crown Company.

---

### MARCELLUS MASON FRISSELLE, M.D.

DIED, March 18, 1902, at Minneapolis, Minn., after an illness of four days from pneumonia, MARCELLUS M. FRISSELLE, M.D.

Dr. Frisselle was born in Peru, western Massachusetts, January 10, 1822. He was a descendant of the French Huguenots who settled there. The first eighteen years of his life were spent on a New England farm. His early education was procured at the common schools, high schools, and at Worthington and East Hampton Academies in his native state. From the age of nineteen to twenty-three he was engaged in teaching and study preparatory to entering on the study of medicine, which he commenced in April, 1844, in the office of Dr. T. H. Brown, of Worthington, Mass. He spent four years in study, and attended three full courses of medical lectures, one of which was at the College of Physicians and Surgeons, New York city, the other two at the Berkshire Medical College, at Pittsfield, Mass. After taking his medical degree, he spent six months in practice with Dr. C. Gitteau, of Lee, Mass. Early in 1848 he opened an office in Rockville, Conn., where he spent five years, removing to Plainfield, N. J., in 1854. He relinquished medical practice in 1859, removing to Kingston, N. Y., where he practiced dentistry for twenty years, removing to Minneapolis, Minn., in 1880.

Dr. Frisselle was an active member of the Tolland County, Conn., Medical Society, of the Ulster County Medical Society, N. Y., and of the Society of Physicians and Surgeons of Minneapolis, and was a charter member of the Minneapolis Dental Society. In 1862 he published a work entitled "The Teeth; Their Care and Treatment," and in 1883 invented a jacket for the treatment of spinal curvature. He has been a contributor not only to medical and dental literature, but to the current literature of the day, and has furnished many valuable papers to scientific and literary societies. He was appointed lecturer on medical and surgical dentistry in the Minnesota College Hospital in the winter of 1881-82, and in the following year he was appointed "professor of medical and surgical dentistry" in the same institution, and was instructed by the trustees and faculty to organize a dental department and to nominate persons to fill the various chairs. Not only in this organic work of establishing the College of Dentistry did he show his zeal for professional advancement, but in his persistently advocating a higher standard of dental education, claiming dentistry to be one of the most important specialties in the broad field of medicine, and as such demanding thorough preliminary culture and abundant scientific and technical training by teachers of high moral, intellectual, and professional attainments. In 1882 the Ohio College of Dental Surgery conferred on him the honorary degree of Doctor of Dental Surgery.

Dr. Frisselle was a wide reader of the best literature, thereby keeping abreast of the thought of the times and in full sympathy with the liberal, progressive spirit of the age.

He was married to Martha M. Smith, daughter of Hon. Henry Smith, of Lee, Mass., in 1849. The fruit of this union was two daughters, Mrs. Gilbert Van Eppen, of Minneapolis, and Mrs. Alice M. Gould, of Buxton, N. Dak.

Mrs. Frisselle died in 1882, and the doctor was again married, in 1884, to Mrs. Alice M. Smith, of Brooklyn, N. Y. He retired from professional work in 1889, since which time he has chiefly devoted himself to the study and practice of horticulture. He was an expert in the culture of small fruits, and those who have been his guests at Clover Nook, Lake Minnetonka, can testify to the beauty of his flowers and the abundant fruit of his vineyard. He was a member of the State Horticultural Society and a regular contributor of valuable papers at its annual meetings. At the ripe age of fourscore years he still retained his youthful activity of mind and body, attracting the young by his genial and friendly intercourse, and those of riper age by his intelligence and wide range of knowledge. He is survived by his widow and by two daughters by his first marriage.

## REVIEW OF CURRENT DENTAL LITERATURE.

[*l'Odontologie*, Paris, April 15, 1902.]

IS THE SYMMETRICAL EXTRACTION OF THE FIRST PERMANENT MOLARS A JUSTIFIABLE OPERATION? BY DR. E. FÖRBERG, STOCKHOLM.

This carefully written paper was read before the Société d'Odontologie of Paris, and in it the author proves conclusively the error of extracting the upper and lower first molars. The author reviews the arguments set forth by the advocates of the symmetrical extraction of these teeth and shows that they are based upon false premises.

He questions the correctness of the two propositions advanced by the late Dr. Andrieu in favor of extraction, as follows: Dr. Andrieu stated that the first molar is more susceptible to caries than any other tooth. The examination of the teeth of 18,000 school-children of Sweden by the author of this communication has, however, shown that the percentage of caries in the second molar at the age of fourteen to fifteen is greater than that of the first molar at the age of seven to eight years. Hence from this fact the conclusion can be drawn that immediately after its eruption the second molar is more likely to become carious than the first molar is at the age of seven to eight years. "Besides," Dr. Förberg says, "my clinical experience has shown me that after the twelfth year,—that is, after the disappearance of its dangerous neighbor, the deciduous second molar,—the permanent first molar is less susceptible to caries, while at this same period the susceptibility of the second molar to caries increases very largely. The first molar is hence, after the twelfth year, a more resistant tooth than before."

From the above discussion it can be seen that, as the tendency to caries of the first molar after the tenth year is less than the susceptibility of the second molar to the same disturbance, it would be irrational to practice the extraction of a first molar in order that the second molar, which is a weaker tooth, should take its position.

The second proposition advanced by Dr. Andrieu was that the extraction of the first molar would give more room to the other teeth. The essayist admits that teeth in close contact are more liable to the ravages of caries than those in which a space is found between each individual organ, but at the same time he endeavors to demonstrate the fact that the extraction of the first molars does not result in the gaining of the space referred to.

Discussing the evils caused by the extraction of these teeth, the fact appears

that reduction in the force of mastication is not the only consequence, for after the extraction of the teeth referred to, and until the eruption of the second molars, mastication, as the author shows, has to be carried on by the front teeth, and thus this important process is interfered with just at a period in the physical development of the child when thorough mastication is absolutely necessary.

Another evil following extraction of the first molar consists in the lowering of the articulation and in some cases the production of a prognathous condition of the front teeth. Regarding the question of gaining space, the writer states that as soon as the first molars are extracted nature endeavors to repair the damage by changing the position of the teeth, and that while there is a gain in space, this is only temporary, as the remaining teeth continue to move, unless prevented from so doing by the articulation, until they are in close contact. By the extraction of the first molar the occlusal curve of compensation becomes flattened and the normal force of mastication is reduced. This condition of things takes place if the teeth in both jaws follow the same direction, but if one among these teeth be prevented from moving by its antagonist, the result will be the formation of small interstices brought about by the inclination of the teeth. In these interstices food débris accumulates, which pressing against the gum destroys the regularity of the gingival outline, a condition which is followed by deleterious results. He also calls attention to a condition which has not been sufficiently studied, *i.e.*, the influence of the extraction of the first molars upon the growth of the mandible, which, as is well known, grows by the apposition of new osseous cells behind the first molars, and in this way necessary room is provided for the molars that erupt later on in life. But as nature does nothing without a cause, when the first molar has been extracted the second molar takes its place and the backward development of the mandible does not occur. Hence, the extraction of the first molars not only reduces the force of mastication, but also disturbs the arrangement of the articulation and produces no favorable changes whatever.

[*Deutsche Monatsschrift für Zahnheilkunde*, Leipzig, April 24, 1902.]

#### PARAFFIN PROSTHESIS. BY DR. A. SCHWARZE.

Some months ago, Dr. Gersung published in the *Zeitschrift für Heilkunde* (1900, vol. i, No. 9) a paper on subcutaneous prosthesis by means of the injection of liquid vaselin. He then devised the use of paraffin ointment, having a melting-point of 40° C. As to the way in which paraffin acts when injected subcutaneously, Dr. Gersung is of the opinion that it acts in the organism as a sterile foreign body becoming encapsulated, this being followed by an infiltration of the paraffin by small cells.

The author refers to Dr. Albert E. Stein, who during many months experimented upon rabbits and other animals in order to ascertain, first, whether paraffin, when injected subcutaneously, had any toxic effect; second, whether there was any danger of the formation of emboli in the lungs. The first question was easily ascertained by the experiments above referred to, the author having found that the subcutaneous injection of five grains of paraffin into mice and rabbits produced absolutely no changes. Regarding the second proposition, it is stated that while there are cases on record of emboli, the literature on the subject does not record a single fatal case.

After giving the description of two cases of deformed noses successfully treated with subcutaneous injections of paraffin, the author refers to a case of special interest to dentists. This case consisted in closing up an opening in the palate the result of surgical intervention. An injection of paraffin was made into the flaps of mucous membrane at each side of the opening. The opening was thus closed and speech was greatly improved thereby. This method of paraffin injection can also be utilized by the dentist in cases where



pronounced absorption of the alveolus follows the loss of an incisór tooth; in such cases the natural organ has to be substituted either by a very long tooth or else by a gum tooth. The result of this procedure is as a rule very unsatisfactory, as it is almost impossible to match the natural color of the gums. To obviate these difficulties it is advised to inject paraffin into the gum tissue of that region, and in this way fill up the space produced by the absorption of the alveolar tissue, when a plain rubber tooth can be used.

[*P'Odontologie*, March 30, 1902.]

## A FEW CONSIDERATIONS UPON CHLOROFORM ANESTHESIA.

By DR. ED. BIOUSSE, PARIS.

The author recounts the different methods of chloroform administration and quotes the statistics of fatal cases of chloroform anesthesia collected by different surgeons and physiologists. He then discusses the question of the administration of this anesthetic, and touches upon the manner of keeping chloroform absolutely free from air and impurities. He advises to keep it in yellow bottles having a very slender opening so that they can be hermetically sealed by means of the flame. By keeping it in this way he has been able to obtain good results from chloroform that had been standing for three years. He next takes up the question of the texture of fabrics used as masks for chloroform anesthesia, and says that they should be made of one layer of unstarched cloth of loose texture, so that when held in the proper way the patient breathes a mixture of chloroform and air. If the anesthesia is slowly produced, the single layer is covered up with a second layer of material of the same texture, and thus the quantity of air breathed will be decreased.

The next question discussed by the author, and one of vital importance, relates to gaining the confidence of the patient. He refers to fatal issues due simply to fear, and quotes Desault, Simpson, Verneuil, Delbet, Reclus, Bazy, and Delorme, who have reported cases of death due to this cause. He advises the anesthetist to tell his patient "that chloroform is a special kind of alcohol which causes intoxication like brandy, but with greater rapidity, and that the same results could be obtained by the ingestion of champagne, but that this plan would demand too much time." It is also recommended to inform the patient of the effects of the drug in the following way: "You will at first perceive the strong, penetrating, and spirituous odor of chloroform, also some degree of itching in the nose and throat such as would be produced by the inhalation of some strong odor. Following this, you will feel the entrance of the anesthetic into the lungs, a condition which is marked by a sensation of warmth in the bronchi, and your heart will beat stronger; you will then know that the chloroform has entered the blood-stream and that it is being carried to every part of the body. You will have a feeling of formication in the arms and legs, and you will feel dizzy, as in the case of alcoholic intoxication; you will have a buzzing noise in the ears, you will hear sounds as if produced by the ringing of bells, the beating of drums, or the running of machinery; lastly you will feel drowsy, this being followed by a deep quiet sleep free from any annoying feeling." As soon as this description is recited to the patient, the administration of the anesthetic should begin.

He next discusses the period of the anesthesia at which the operation should be begun. The author is of the opinion that the operation should be begun at that period of the anesthesia when the pupil is as yet dilated and the palpebral reflex weakened and upon the point of disappearing, but not completely abolished. The anesthesia should not be carried to the abolition of the ocular reflex and pupillary contraction. The writer depends almost exclusively upon the palpebral reflex as an anesthetic index, and says that when it is abolished the anesthetic should be immediately removed. The

presence or absence of this reflex should be ascertained eight or ten times a minute.

The next question discussed is whether the intensity of the anesthesia should be the same throughout the different stages of an operation. Dr. Biousse believes that the intensity should vary according to the degree of sensitivity of the tissues operated upon. As to the anesthesia necessary for different varieties of operation, the author refers to those in which there is danger of swallowing blood or foreign bodies, such as in resections of the jaws or extraction of teeth, and says that in cases of this nature the pharyngeal reflex should not be lost. Referring to the administration to children, it is stated that as the young patients have no foresight of the dangers of surgical intervention they do not fear the operation, and hence the accidents that are due to this cause cannot take place.

The following diseases are given as contraindications to the use of chloroform: Diseases of the nervous system, diseases of the cardio-pulmonary apparatus, and diseases of the kidneys. The so-called dyspneic diseases should also contraindicate, to a certain extent, the use of chloroform.

Among the conclusions drawn by the author, the following are the most important:

Chloroformization is necessarily a dangerous procedure. It can be used in the case of all patients provided that the quantity of chloroform administered be proportioned to the vital resistance of the patient.

Reflexes are vital manifestations, and their total abolishment should be avoided. The intensity of anesthesia should vary in proportion to the degree of sensitivity of the tissues operated upon.

[*Ungarische Stomatologische Zeitschrift.*]

#### RELATIONSHIP OF HEREDITARY SYPHILIS TO IMPERFECT DENTITION. BY DR. FRANZ POOR.

The author discusses in detail the Hutchinson's tooth and differentiates it from others which present close resemblance thereto. He makes reference to the three diagnostic signs of hereditary syphilis: 1. Parenchymatous keratitis; 2. The characteristic abnormality of the two upper incisors; 3. Disturbances of the labyrinth. He then states that Robinson, Hyde, Kriowski, and himself have observed a pathognomonic sign of hereditary syphilis. This sign consists in the presence of two white linear radiating scars in the mouth, eyes, or anus, and are in evidence in company with one or more of the three Hutchinson signs already referred to. Dr. Poor very wisely remarks that authors erroneously speak of as "Hutchinson's teeth" organs with deformities which in no way resemble the abnormalities described by the English observer, and notwithstanding that in 1863 Dr. Hutchinson stated that the whole question involved the examination of the permanent upper lateral incisors, and that many physicians who are not acquainted with tooth-deformities could spare themselves many inconveniences by limiting their examinations to these teeth: "The teeth of hereditary syphilis are generally short and narrow with a marked furrow upon the incisal edge and round corners. Horizontal notches and furrows are frequently seen, although these deformities have no relationship with syphilis." The essayist states that these teeth when fully developed are pathognomonic of hereditary syphilis. Later on Hutchinson made the statement which follows: "If the central incisors are arrested in their development and a single fissure is present upon the free border, the diagnosis of syphilis is almost certain. As far as the lower incisors are concerned, they seldom present the fringed border or small appearance, but, even if they do, these signs are of no value if the characteristic signs of the upper lateral incisors be not present."



The author also judiciously remarks that the Hutchinson teeth are signs of hereditary syphilis only when other symptoms are present. In support of this he states that Hutchinson himself always considered the teeth thus characterized as symptoms of syphilis only in connection with the other phenomena already referred to. The author quotes Johann Bokay, who in the year 1865 objected to considering the Hutchinson tooth as a pathognomonic sign of syphilis, as he had observed it in perfectly healthy children. The author mentions Kobner, Lesser, Hirschberg, Heubner, Krisowski, and Silex, who considered the semilunar concavity in the free edge of the lateral incisors as a pathognomonic sign of "syphilis hereditaria."

Reference is also made to the views of Parrot regarding the diagnosis of syphilis by the Hutchinson teeth and the syphilitic causation of the atrophy of the premolar cusps and erosion of the canines of the first dentition; also to Fournier's opinion relative to the certainty with which syphilis can be diagnosed by the deformity of the lateral incisors described by Hutchinson. However, it should not be forgotten that he observed other tooth-deformities traceable to syphilitic infection. Reference is made to Zeisst, Lang, and Duhring, who have stated that deformities of the teeth, including the Hutchinson tooth, are sometimes associated with scrofula. Hensch and Hochsinger have observed the Hutchinson tooth in rachitic children in whom syphilitic infection was not traceable. The author of this paper states that he has observed the Hutchinson teeth in the majority of cases in conjunction with other symptoms to which reference has already been made. As far as other dental anomalies attributed to syphilis are concerned, he has observed only a very limited number of cases, and is therefore not in a position to state whether they are of syphilitic causation. Fournier was the first to observe morphological changes in Hutchinson teeth, changes on account of which the Hutchinson teeth are not observable after the age of twenty-five or thirty. The author also discusses carefully the reasons why the permanent upper lateral incisors should be affected in preference to the other teeth of this set. He says that the calcification of the upper lateral incisors takes place during the first year of life at a time when the influence of hereditary syphilis is most intense. The reason why the first molar and the deciduous canine are sometimes affected is attributed to the fact that these teeth develop at the same time as the upper lateral incisors.

In concluding his paper Dr. Poor states that, given the presence of the Hutchinson tooth, the fact can be deduced that, after the fourth month of embryonal life or during the first year of extra-uterine life, a syphilitic infection is carried to the organism which results in the faulty development of certain organs,—the teeth, from the standpoint of the dental practitioner, being those of greater importance.

[*Prag. med. Wochenschrift.*]

#### CONTRIBUTION TO THE STUDY OF MAXILLARY CYSTS. By H. JUNGnickel.

The case described in this paper is that of a woman aged fifty-five, who at the age of twenty-six suffered from a very violent toothache. Following this disturbance a soft tumor of the size of a cherry appeared upon the internal surface of the right side of the mandible. The patient had the lower second molar extracted, and this was followed by profuse exudation of blood and pus. The tumor persisted and on this account the lower first molar of the same side was extracted. This operation was followed by good results, the patient was greatly relieved and was perfectly comfortable during the following ten years, but at the end of this period of time the neoplasm reappeared, and, notwithstanding the extraction of the lower right second molar, increased continuously in size and volume to such an extent that mastication became impossible. It was then that she decided to be operated upon.



The operation revealed a very large tumor which extended from the mental symphysis and covered the horizontal and vertical portions of the right side of the lower jaw. It was found upon pressure to be soft at some points, and in others the parchment sound could be heard. It projected into the mouth and rendered mastication and the movements of the tongue not only difficult, but also painful. The skin covering the tumor was slightly movable and did not present any special appearance. The operation consisted in the removal of the neoplasm and the resection of the lower jaw. The tumor was hollow and was divided into three compartments, and contained a liquid which under the microscope showed the presence of red and white blood-corpuscles. Mr. Jungnickel believes that this neoplasm was a periosteal cyst, which in its slow and progressive growth had brought about the complete destruction of the bony substance of the inferior maxilla. The patient had never suffered any traumatism, but during the period which elapsed between the recurrence of the tumor and the operation, very often she opened the tumor with an ordinary penknife. The author believes that this series of small traumatisms can be considered as one of the causes of the enormous growth attained by the neoplasm.

[*Deutsche Zahnärztliche Zeitung*, Munich, April 15, 1902.]

#### NEURALGIA OF THE TONGUE. BY DR. KOWLER.

Dr. Kowler reports a case of neuralgia of the tongue from the practice of Dr. L. Quentin, of Brussels, caused apparently by the wearing of a spiral spring plate. Everything in the power of the attending practitioner was done in order to relieve the patient, but without the slightest success. Even a tooth that remained in the mouth was extracted, believing that that organ might be the cause of the persistent pain. It was then decided to remove the plate; this was followed by the disappearance of the pain. Thinking that she was cured, the patient began to wear the plate again, but this was again followed by severe pain. Dr. Quentin then conceived the happy thought of widening the plate about  $2\frac{1}{2}$  mm., and had the patient wear it again for some time. Since then the pain has not reappeared, and the patient is wearing the plate to the satisfaction of both herself and Dr. Quentin. The pain was probably due to a too narrow plate irritating the tongue and causing inflammatory disturbances of the sensitive tissues of this organ.

[*Medical News*, April 19, 1902.]

#### GENERAL ANESTHESIA IN THE PLETHORIC. BY DR. M. L. MADURO.

Plethoric individuals take nitrous oxid very well, but ether rather poorly, unless allowed to switch off to chloroform for a while, when on resuming ether they will bear that drug without discomfort. For this reason the author advises that, immediately after the nitrous oxid, a few whiffs of ether be given, then chloroform for an average of ten minutes, continuing with ether diluted with a small amount of air for the remainder of the operation. No harm can come from such frequent change of narcotics.

[*Revue Odontologique*, Paris, March, 1902.]

#### ZINC OXID IN DENTAL THERAPEUTICS. BY J. M. BARRELLIER, CHIEF OF CLINIC, ECOLE ODONTOTECHNIQUE.

Dr. Barrellier reports very favorably upon the use of cotton impregnated with a paste of hydrogen dioxid and zinc oxid as a temporary filling.

Fillings made with this material were removed, after a sojourn of about a week, from mouths unhygienically kept, and were found to have been but slightly penetrated by the buccal secretions.

[*Presse Médicale.*]

## ACTION OF TOBACCO SMOKE UPON CERTAIN MICROBES OF THE MOUTH. BY EM. DUNON, MONTPELLIER, FRANCE.

The author of this interesting thesis has found that tobacco smoke has no action upon the development of the bacillus of tetanus, the typhoid bacillus, or leptothrix buccalis, but that it intereferes intensely with the evolution of the bacillus diphtheriæ, the bacillus tuberculosis, and the staphylococcus, and sometimes completely arrests the development of these species. This action upon certain micro-organisms, the author states, is not due to nicotine but to the other products of the combustion of tobacco.

[*La Odontologia*, Madrid, March, 1902.]

## PHOSPHOR-NECROSIS. BY DR. SARRIÁ, SURGEON TO THE SPANISH NAVY.

The object of this paper is to discuss the part which the phosphorus fumes play in the production of the so-called phosphor-necrosis. In view of our present knowledge on the nature of infections, phosphorus *per se*, the author says, has no power to bring about tissue destruction, and the newly admitted theories on the nature of inflammatory processes which require the presence of the septic agent in the seat of the disturbance supports the foregoing asser-tion. Phosphorus prepares the field for the future invasion of the infecting micro-organisms, but is not the direct agent in the production of the so-called phosphor-necrosis, which as a matter of fact is nothing more than an osteitis or carious process brought about by simple infection. The true etiological factor is a general intoxication, an increase in the acidity of the blood-plasma, and the alteration in the structure of the maxillæ caused by an abnormal chemical metabolism. This is the reason why phosphor-necrosis does not develop in workmen whose mouths are in a healthy condition, for in those cases all avenues of penetration being closed, the infective organism cannot enter the maxillæ and produce the osteitis referred to, while on the contrary the disease sets in as soon as an avenue is laid open either by caries or by a break in the continuity of the mucous membrane. It begins as a diffuse periostitis and ends as a necrosis which may involve not only the mandible but also the neighboring bones. The author concludes by saying that the name of phosphor-necrosis is incorrect and should be abandoned, as the nature of the process is similar to other disturbances of infectious nature, and by recalling the fact that surgical intervention in the treatment of this affection is followed by unsuccessful results.

[*Items of Interest*, May, 1902.]

## BRIDGE ANCHORAGE WITHOUT BAND OR CROWN. BY D. T. HILL, D.D.S., SYRACUSE, NEB.

The author states that the gold shell crown is the most practical attachment for bridges, but that on account of the undesirable display of gold it has to be excluded from the front part of the mouth, and devises a method which is especially valuable when it becomes necessary to insert a bridge between an incisor tooth and a molar. A bridge of this nature would be secured by means of a gold shell crown upon the molar and by the device which the author describes upon the front tooth. The device consists in accurately adapting a tube of gold to a cavity prepared in the substance of the crown of the front tooth which will serve as an abutment; one end of the tube is closed and it is then cemented into the cavity. A further accurate adaptation is obtained by burnishing the tube to the walls of the cavity. Into this tube an iridio-platinum wire of equal diameter is introduced and an impression is taken. The bridge is then constructed and will be secured to its abutments by a gold crown on one end and the pin alluded to on the other.

[*International Dental Journal*, May, 1902.]

**SURGICAL CORRECTION OF MALFORMATION AND SPEECH-DEFECTS DUE TO OR ASSOCIATED WITH HARE-LIP AND CLEFT PALATE.** BY GEORGE V. I. BROWN, MILWAUKEE, WIS.

As stated, the purpose of this paper is to set forth the advantages of a new method in the treatment of hare-lip and cleft palate. After a discussion of the etiology of acquired cleft palate, the author refers to the high rate of mortality recorded after infants have been operated upon for the deformity named, and states that the treatment preliminary to a future operation for hare-lip should be begun at about the seventh or eighth month. The preliminary operation consists in the approximation of the edges of the cleft by means of heavy wire sutures passed from the buccal surface upon one side to the buccal surface of the other through both portions of the jaw, drawn closely and fastened tightly by means of little silver plates. This force brings together the two sides of the cleft, reduces the difficulty of future operation, and induces an equal development of the neighboring osseous tissues. After reducing the width of the cleft in the manner described, the operation for hare-lip becomes an easy procedure, as the space to be covered has been greatly reduced by the approximation of the separated regions. When the operation has to be performed upon children that have erupted their deciduous teeth, bands are cemented to the crowns of the teeth so as to support the appliance which draws the parts together. This appliance is composed of a nut and bar with a thread cut upon it so that by turning the nut slightly several times a day, enough pressure is produced to approximate the edges of the cleft. In the case of adults the same plan is followed, except that the appliance needs to be made of stronger material. After approximation of the edges has been accomplished, "the operations of uranorrhaphy and staphylorrhaphy become much simplified, and can be performed at any period that may seem most favorable to the circumstances and condition of the patient."

After a consideration of the manner of training the patient toward the acquirement of correct speech, the author concludes his communication with the following remarks:

1. The risk of operation in early infancy is unnecessary except where the vitality of the child is threatened by the malformation.
2. The most favorable time for operation is after the deciduous teeth have been erupted, but before the habit of speech has been acquired.
3. Difficulty of acquiring correct methods of pronouncing words after operation in adult cases can only be overcome by careful mental training.
4. There can be no cases which cannot be improved by treatment and operation, both with regard to health and speech, no matter what the age may be, providing the co-operation and assistance of the patient be assured.

[*Treatment*, London, April, 1902.]

**THE ETIOLOGY OF NOMA.** BY PROFESSOR TRACUBUSTI.

This study of the etiology of gangrenous stomatitis was originally published in *Il Policlinico* for January, 1902. In it the author describes a case of noma which developed without apparent cause. The case was examined bacteriologically, and the author succeeded in isolating a characteristic bacillus. Experiments on animals tended to prove that this bacillus when inoculated subcutaneously or into the veins causes death from septicemia, but without producing the symptoms of noma. The author concludes that noma is not caused by the action of any one definite bacillus, but is the result of the influence of many and various micro-organisms.



## PERISCOPE.

**To Protect Steel from Rust.**—Resin melted with 6 or 8 parts lard will protect for years.—*Exchange*.

**To Keep Steel Pens from Rusting.**—Saturate a sponge with a solution of potassium carbonate and let the pen rest on the sponge when not in use.

**Potassium Permanganate Solution for Toothache.**—A one-twentieth solution of potassium permanganate is powerfully effective in toothache.—*Med. Summary*.

**Nose Surgery.**—The latest nose surgery in Vienna consists in the injection of warm sterilized paraffin underneath the skin of the nose to restore its shape.—*Pacific Med. Journal*.

**Vesication by Means of Chloral Hydrate.**—Chloral hydrate spread upon diachylon plaster and applied to the skin will be followed in twenty or thirty minutes by the formation of vesicles.—*Revue de Chirurgie*.

**Odontalgia.**—A towel folded several times and dipped in hot water, quickly wrung out and applied over the painful part in toothache and neuralgia, will generally afford prompt relief.—*Medical Mirror*.

**To Remove the Odor of Iodoform from the Hands.**—The odor of iodoform can be effectually removed by freely applying vinegar to the hands after they have been cleansed with soap and water.—*Medical Review*.

**Repairing Rubber Work.**—In repairing rubber work, a little cement made by dissolving ordinary vulcanite in bisulfid of carbon painted over the surface where union is to take place will make a more nearly perfect joint.—*Items of Interest*.

**Definition of the Word "Profession."**—A profession, according to Dr. N. S. Hoff, is an occupation that properly involves a liberal education or its equivalent, and whose practice requires mental rather than manual skill.—*Dental Register*.

**Lasting Anesthesia.**—Lasting anesthesia can be produced by spraying ethyl chlorid over a surface previously moistened with a concentrated watery solution of cocain. Cocainized ethyl chlorid has been employed for opening abscesses, etc.—*Medical Record*.

**Sodium Bicarbonate in Empyema.**—Irrigation with the four per cent. solution of sodium bicarbonate was the agent used in a case of empyema, described by Dr. Betances, and reported in the *Medical News*. Daily irrigation of the bicarbonate solution for five days effected a cure.

**Use of Broaches in Posterior Teeth.**—In treating posterior teeth, cut broaches off about one and one-half inches long and roll modeling compound previously heated about the end. This serves as a convenient handle and can easily be rotated between the thumb and fingers.—*Items of Interest*.

**Adenoid Vegetations.**—From an abstract of a paper by Dr. Rimscha, published in the *Therapeutic Gazette*, it appears that it was only in 1868 that Meyer discovered, by digital examination, the enlarged pharyngeal tonsil, removed it and restored his deaf patient to health. This pharyngeal tonsil was called by Meyer, "adenoid vegetation."

**Treatment of Pulpless Teeth.**—Mix powdered charcoal into a paste with creasote. With a broach carry the medicament into the canals. If care is observed the dressing can be carried to the apex without difficulty. With this treatment, aching teeth have been permanently soothed where many other remedies have failed.—*Dental Gazette*.

**Delusive Conditions in Shock.**—When a patient has been very badly injured, a condition of buoyant cheerfulness is an indication of shock rather than of vitality. Do not let it lead you to the idea that the case is one favorable for operation. Count the pulse and investigate the temperature of the skin. The chances will be that heat and stimulation are needed.—*Med. Times*.

**Treatment of Hemophilia with Calcium Chlorid.**—Dr. C. E. Walles reports the case of a hemophilic in which it became necessary to extract several teeth. As removal of a tooth two months previously had caused alarming hemorrhage, calcium chlorid was given for a week or ten days in doses of five grains three times a day, when all the teeth were removed with very little bleeding.—*Brit. Med. Journal*.

**Appreciation of Dentistry in America.**—It is a well-known fact that the American public are much more anxious to have their teeth saved than the average Britisher, and know a good deal more of what the dentist is able to do for them. Amongst the lower classes from America I have often seen beautiful conservative work which has been paid for and not done as a charity.—*Journ. Brit. Dental Association*.

**Treatment of Burns with Honey.**—According to the editor of the *Georgia Journal of Medicine and Surgery*, the treatment of burns by means of honey has proved successful. The burn is covered with the honey and acts by excluding the air and by its specific gravity preventing germ life. It is not necessary to sterilize the honey, but if there should be any darkness or dirt in the injured area, it should be mopped off thoroughly with absorbent cotton.—*New York Med. Journal*.

**Dangers in Gelatin Injections.**—According to Drs. A. Stengel and D. L. Edsall (*American Medicine*) the injection of gelatin for the purpose of arresting internal hemorrhage is at times followed by the formation of emboli in the smaller vessels; these, becoming infected, not infrequently break down and form abscesses. Injury to the kidneys may result from the injection of the gelatin; pulmonary edema may be induced, and is not uncommon in animal experimentation. Pain usually accompanies these injections.

**Incompatibilities of Potassium Permanganate.**—Potassium permanganate ignites glycerin or alcohol and detonates when rubbed up with *confectio rosæ*. An unlucky apothecary attempted to dispense the following: Potassium permanganate and alcohol,  $\text{āā}$ . 10 parts; distilled water, 15 parts. Scarcely had the bottle been corked when an explosion took place and the boiling liquid spurted into the face of the surprised pharmacist. He nearly lost the sight of one eye and was disabled for more than a month.—*Exchange*.

**Removal of Swallowed Bodies.**—Whenever a foreign body has been swallowed, it may be removed by an emetic, or by gastrotomy, or it may be allowed to pass through the intestinal canal. If the body is of such size and form that it may be vomited, it is always safest to cause the patient to eat some pultaceous food, like oatmeal, before causing him to vomit. If the body, though small enough to pass readily through the esophagus, is sharp, such as a pin or other small sharp article, give plenty of bulky food and trust that it may be passed.—*International Journal of Surgery*.

**Method of Preventing the Clouding of Mouth-Mirrors.**—Dr. Paul F. Soudern describes in the *New York Medical Journal* a method of preventing the clouding of laryngoscopes which can also be used in the case of dental mouth-mirrors. The method is thus described: "By means of the finger slightly moistened apply a film of soap of any brand or kind to the mirror; then rub this off with a clean dry cloth; the mirror will be as bright and clear as ever; breathing on it will not affect its clearness. The method is certainly a clean one, and the mirrors do not suffer from the operation."

**Action of Oxyphosphate Cement upon the Dental Pulp.**—I have no sympathy with the opinion so widely held that oxyphosphate tends to destroy tooth-pulp. I have had too much experience in capping pulps with oxyphosphate of zinc to think so, and have found that they live too well under this as a capping for me to suppose for one moment that there is anything in the oxyphosphate that is intrinsically obnoxious to the vitality of the pulp. I recognize that many pulps do die under oxyphosphate, their conditions having been such that they were unsuitably chosen for capping.—G. V. BLACK, *Items of Interest*.

**Cleaning of Teeth in Sleeping-Cars.**—There are evils of construction in the modern railroad car responsible for much of the infection and the difficulty of eradicating it. With the spitting, hawking, and blowing of the nose into the wash-bowl (everybody washes their teeth over these bowls, for no other place is provided), it is no wonder that they frequently convey infection. It is unfortunate that a special sink is not furnished in the toilet-room of the coach for the teeth-cleaning process, and that the faucets of the wash-bowl are not arranged so that one can wash in running water.—*International Journal of Surgery*.

**Treatment of Odontalgia Caused by an Exposed Pulp.**—For the relief of toothache due to pulp-exposure many remedies are being suggested, but seldom do we find in modern literature any reference to tincture of opium (laudanum). It was thus used in olden times, and produces most satisfactory results; it has the advantage over morphin acetate of being more readily absorbed by the tissues of the pulp. Before applying it, the exposed area should be freely irrigated with water at blood temperature, and if possible should be made to bleed freely, when a small pellet of cotton saturated with laudanum should be placed upon the exposure.—J. E.

**Our Invisible Foes.**—The main trouble in convincing people in general of the danger of microbic infection is due to the fact that the micro-organisms of disease are so small that they cannot be seen with the naked eye. If they were as evident and ferocious-looking as tigers we would all go gunning for them and rid our neighborhood of them before we could live there in peace and comfort. It is otherwise with an invisible foe, and while the people may be willing to believe in a general way that many diseases are due to microbes, it seems that they can neither understand nor appreciate a danger so intangible and so mysterious in its effects.—*Exchange*.

**Start Right!**—"If you start out with the determination to do the greatest good, and follow this idea steadfastly in your daily work, you have at least taken the first steps on the road which most surely leads to ultimate success. A man cannot continually do good to others without doing a corresponding good to himself. There is no law of mathematics more stable or invariable than this law of morals. It seems difficult for the average individual to learn this one lesson, and yet its application to the affairs of everyday life would do more for the success and happiness of the human family than any other one system of morality that has ever been preached."—C. N. JOHNSON, *Dental Review*.



**Treatment of Cellulitis Due to Alveolar Abscess.**—The swelling and inflammation of the cellular tissues of the cheek caused by the infiltration of pus from an alveolar abscess can be very much relieved by the application of the following modification of the old preparation of lead-water and laudanum:

R—Liquoris plumbi subacetatis, fl̄ss;  
Tincturæ opii, fl̄ij;  
Aquæ destillata, fl̄vj. M.

Sig.—Saturate cotton compress and apply upon inflamed area.

—J. E.

**A New Test for Formaldehyd in Milk.**—A. G. Luebert (*Journal of the American Chemical Society*), recommends the following test: Five grams coarsely powdered potassium sulfate are placed in a 100 c.c. flask, 5 c.c. of the suspected milk are distributed over it by means of a pipette, and 10 c.c. of sulfuric acid (specific gravity 1.84) carefully poured down the side of the flask. The whole is now allowed to stand quietly until the color develops. If formaldehyd be present, the violet coloration occurs in a few minutes; if none be present, the liquid will at once assume a brown color, rapidly changing to black. The test is said to reveal the presence of one part of formaldehyd in 250,000 parts of milk.—*Am. Journ. of the Med. Sciences.*

**Treatment of Carbuncle.**—Carbuncle, always a painful lesion, and sometimes dangerous to life, may be arrested in its early stages by a simple and never-failing remedy, displacing altogether deep bisection or the more formidable procedure of excision. The hypodermic employment of pure carbolic acid here is a specific. In the papillary stage the deep injection of one or two drops of carbolic acid will at once abort any further advances, but even though the purulent stage is reached, multipuncture and injection will instantly annul the excruciating pain and arrest further spread of the infection. Its action is escharotic, coagulating the albuminous elements of suppuration, and inhibiting any further microbic action. After its employment in advanced cases, we employ emollients until the necrotic tissue is thrown off and the ulcer has healed.—*Internat. Journ. of Surgery.*

**A Partial Third Dentition.**—Dr. Pandatyis describes in *Progrès Dentaire* the following curious case: A woman fifty-five years of age who had lost all her teeth at the age of twenty-five consulted me last year regarding a hard protuberance upon the mandible. After careful examination I concluded that the projection upon the gums was caused by a tooth which was about to erupt, and which later on proved to be a bicuspid having the characteristics of a deciduous tooth. Three months later my patient had erupted eighteen teeth, ten in the mandible and eight in the maxilla. The eruption of these teeth never caused the person in question the slightest painful sensation.

[Cases of eruption of teeth at advanced age have been reported at different intervals in medical and dental publications, but almost always the data furnished are insufficient or not fully reliable. From the year 1860 up to the present time about twenty cases have been reported in the DENTAL COSMOS.—Ed.]

**Disinfection of Surgical Instruments by Spirit of Soap.**—Polak (*Deutsche med. Wochenschrift*, quoted in *Therapeutic Gazette*) states that the spiritus saponis kalinus will destroy within fifteen minutes the staphylococcus, and that its germicidal power is noticed after contact of only half a minute. Its action is both chemical and mechanical, and it is especially to be recommended for the disinfection of all forms of cutting instruments, which by this method do not lose their edge. The instruments should be laid in this solution for fifteen minutes before operation, and then should be dried

with a sterilized towel or pad. The soap can be removed by the application of 50 per cent. alcohol or a sterile solution of boric acid.

[Mikulicz was the first to report favorably upon the use of spirit of soap for the disinfection of instruments, but the researches carried on by Dr. W. D. Miller (see *DENTAL COSMOS*, November, 1901, page 1255) have shown that spirit of soap is not as efficient as five per cent. solution of lysol.—Ed.]

**Chloroformization of Patients Suffering from Cardiac Disorders.**—In a paper which recently appeared in *Progrès Medical*, Dr. Huchard makes the astounding statement that he has administered, successfully, chloroform to three hundred patients suffering from cardiac disorders, and that the administration of chloroform to such patients is not so dangerous as is generally believed.

[It would seem to be quite a hazardous thing to base a statement upon the results of three hundred chloroformizations. In order for statistics to be of real value they should refer to "thousands of cases." (See *DENTAL COSMOS*, 1901, vol. xliii, p. 139.) It is not possible to claim that a given anesthetic is safe because in a series of fifty, one hundred, or more cases its administration has been safely carried out. Chloroform is at the present time very wisely considered as an extremely dangerous agent, on account of its depressing action on the heart and also because cardiac syncope occurs in some cases without the slightest warning to the operator. Clinically and experimentally it has been conclusively proved that chloroform is a powerful cardiac and respiratory depressant, even in the case of healthy individuals; its action, therefore, upon the diseased heart, it is rational to suppose, would certainly be more marked. Without casting any doubt upon Dr. Huchard's statistics, we will say that in our opinion he should have observed several thousand cases before jumping at conclusions which when given publication might become the cause of fatal results.—Ed.]

## HINTS, QUERIES, AND COMMENTS.

### The Tongue-sucking Habit.

TO THE EDITOR OF THE *DENTAL COSMOS*:

Sir,—In the April issue of the *DENTAL COSMOS* I noticed the query as to the tongue-sucking habit. A vulcanite base plate may be made with a very short pin set in just behind the centrals, pointing backward. It may be worn day and night and does not inconvenience talking if the pin be not too long. At night it is especially useful, for at that time the habit is most marked.

Hoping that this device may be of some use to your correspondent,

Sincerely yours,

BERLIN.

CHAS. F. BÖDECKER, JR., D.D.S.

TO THE EDITOR OF THE *DENTAL COSMOS*:

Sir,—In regard to the tongue-sucking child, I would suggest that the mother, when the child is asleep, talk to it in this way, viz: "Mary" (if that be her name), "you will not wake up while I talk to you," and then follow with a talk just as she would to the child if awake: that what she is doing is wrong, that it is a nasty habit, and she should not do it any more; in fact, "You will not do it any more." Repeat this to the child, say six times each night for two or three nights, when lo! it will be gone.

Yours truly,

MOUNT CARROLL, ILL.

JAMES W. CORMANY.

### Concerning Dental Nomenclature.

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—Some time ago the terms "canine," and "premolar" were used instead of the present terms, "cuspid" and "bicuspid." The former terms, I think, indicate their function, while the latter indicate their shape or form. It occurs to me, Why not use another term, with better expression, for *molar*?

"Molar," I suppose, like "premolar," indicates a function, with a rotary motion, in grinding the food, etc. Now, since this term does not indicate exactly the kind of motion performed in masticating the food, it might be as well to discard altogether the term "molar," like "premolar," and to follow suit with the names expressing the shape or form of the organ. For instance, the term "multicuspid," which is used in some dictionaries and by some dentists as well, would, I think, very properly replace the term "molar." Hence we should have: Cuspid, bicuspid, and multicuspid (or polycuspid) respectively.

Yours truly,

STEPHEN MARKARIAN, *Dentist*.

ALEPPO, SYRIA.

### Some Incorrect Statements on Somnoform.

IN an article on "Somnoform," by Dr. C. S. Kellogg, Chicago, Ill., published in *Dental Hints* and quoted in the *Pacific Dental Gazette*, are several statements which are not in accordance with the literature of the subject discussed.

For instance, the author begins by saying that somnoform was recently discovered by a French chemist. This is a misstatement in the full sense of the word: the discoverer of this anesthetic mixture,—not "anesthetic compound" as stated,—is not a French chemist, but Dr. Rolland, of Bordeaux, a French dentist, holder of the medical degree.

The essayist further says that somnoform has been used extensively in the hospitals of Europe and the United Kingdom. The correctness of this statement is questionable, inasmuch as it was only in May, 1901, that Dr. Rolland presented for the first time the results of his experiments before the Section on Odontology of the French Association for the Advancement of Science, and an experience of less than a year in the use of an agent of this character affords an insufficient basis for a statement like the one in question. It should also be remarked that if somnoform is used in England as widely as is claimed, the dental and medical press of that country would have certainly mentioned the fact, but, as far as the writer is aware, the most important medical and dental publications of England have never made the slightest reference to this anesthetic mixture.

A writer should be positive regarding the accuracy of statements relative to so important a matter, especially when intended for publication, and which in the course of time might prove detrimental in the case of credulous readers. The description of Mr. C. de Trey's self-administration of somnoform is an excellent example of reckless procedure, for no matter how safe an anesthetic or an anesthetic mixture may be supposed to be, fatal results would undoubtedly attend their administration if the plan described in connection with de Trey's case were followed; for anesthesia, whatever the agent employed or however good the health-status of the individual may be, must always be looked upon as a serious and dangerous operation.—J. E.



## DENTAL SOCIETY ANNOUNCEMENTS.

## COMING DENTAL MEETINGS—JUNE AND JULY, 1902.

## JUNE.

CALIFORNIA STATE DENTAL ASSOCIATION. San Francisco. June 10th.

COLORADO STATE DENTAL ASSOCIATION. Colorado Springs. Three days: June 17th, 18th, and 19th.

GEORGIA STATE DENTAL SOCIETY. Macon. June 10th. State Board of Dental Examiners meets same time.

INDIANA STATE DENTAL ASSOCIATION. Lake Maxinkuckee. Three days: June 24th, 25th, and 26th.

MARYLAND STATE DENTAL ASSOCIATION—JOINT MEETING WITH DISTRICT OF COLUMBIA. Washington, D. C. Two days: June 6th and 7th.

MASSACHUSETTS DENTAL SOCIETY. Boston. Two days: June 4th and 5th.

MICHIGAN DENTAL ASSOCIATION. Grand Rapids. Three days: June 9th, 10th, and 11th.

NORTH CAROLINA DENTAL SOCIETY. Raleigh. Three days: June 19th, 20th, and 21st.

## JULY.

CONNECTICUT ODONTOLOGICAL SOCIETY. New Haven. July 1st.

DELAWARE STATE DENTAL SOCIETY. Wilmington. July 2d.

MAINE DENTAL SOCIETY. Camden. Three days: July 15th, 16th, and 17th.

NATIONAL DENTAL ASSOCIATION. Niagara Falls. Four days: July 28th, 29th, 30th, and 31st.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS. Niagara Falls. July 28th.

NATIONAL ASSOCIATION OF DENTAL FACULTIES. Niagara Falls. July 28th.

NATIONAL ASSOCIATION OF COLORED DENTISTS. Washington, D. C. Three days: July 3d, 4th, and 5th.

NEW JERSEY STATE DENTAL SOCIETY. Asbury Park. Three days: July 16th, 17th, and 18th.

ONTARIO (EASTERN) DENTAL ASSOCIATION. Cornwall. Two days: July 9th and 10th.

PENNSYLVANIA STATE DENTAL SOCIETY. Bedford Springs. Three days: July 8th, 9th, and 10th.

SOUTH DAKOTA DENTAL SOCIETY. Watertown. Three days: July 8th, 9th, and 10th.

TENNESSEE DENTAL ASSOCIATION. Monteagle. July 1st.

WISCONSIN STATE DENTAL SOCIETY. Milwaukee. Three days: July 15th, 16th, and 17th.

## EXAMINING BOARDS.

CALIFORNIA. San Francisco. June 16th.

COLORADO. Denver. June 3d.

DELAWARE. Wilmington. June 2d.

DISTRICT OF COLUMBIA. Washington. July 8th.

GEORGIA. Macon. June 10th.

MAINE. Portland. June 10th, 11th.

MINNESOTA. Minneapolis. June 10th.

NEW HAMPSHIRE. Manchester. June 18th, 19th.  
 NEW JERSEY. Newark. July 7th.  
 NORTH CAROLINA. Raleigh. June 16th.  
 PENNSYLVANIA. Harrisburg. June 2d.  
 RHODE ISLAND. Providence. June 30th.  
 SOUTH DAKOTA. Watertown. July 8th, 9th, and 10th.  
 VERMONT. Montpelier. July 9th.  
 VIRGINIA. Richmond. June 10th.

---

## NATIONAL DENTAL ASSOCIATION.

### CHANGE OF DATE OF MEETING.

IN accordance with the result of the recent postal card vote, the date of the coming meeting of the National Dental Association will be changed from the first Tuesday of August to Monday, July 28th, and will continue four days.

A. H. PECK, *Rec. Sec'y.*

---

## NATIONAL DENTAL ASSOCIATION—SECTION IV.

THOSE who will present papers upon the subjects of Etiology, Physiology, Hygiene, Prophylaxis, and Electricity will kindly communicate with the chairman of the Section, J. D. Patterson, Kansas City, Mo., or to

EMMA EAMES CHASE, *Sec'y,*  
 3334 Washington ave., St. Louis, Mo.

---

## AMERICAN MEDICAL ASSOCIATION—SECTION ON STOMATOLOGY.

THE following is the program of the Section on Stomatology at the American Medical Association meeting to be held at Saratoga Springs, N. Y., June 10-13, 1902:

1. Chairman's Address: Dr. A. H. Peck, Chicago, Ill. 2. "Embryology of the Dental Pulp," R. R. Andrews, Cambridge, Mass. 3. "Histology of the Pulp," Vida A. Latham, Chicago, Ill. 4. "Notes on the Preparation of Teeth for the Microscope," Martha Anderson, Moline, Ill. 5. "Evolution of the Pulp," Eugene S. Talbot, Chicago, Ill. 6. "A Comparative Study of the Attachment of Teeth," Frederick Noyes, Chicago, Ill. 7. "Permanent Benefit from Correction of Irregularities of the Teeth due to Interstitial Gingivitis," M. H. Fletcher, Cincinnati, Ohio. 8. "Observations on Some Recent Cases of Orthodontia, with Illustrations," E. A. Bogue, New York City, N. Y. 9. "General Nervous Manifestations in Relation to the Jaws and Teeth," G. V. I. Brown, Milwaukee, Wis. 10. "Electric Ozonation in Neuralgia," G. Lenox Curtis, New York City. 11. "Diagnosis," Jonathan Taft, Cincinnati, Ohio. 12. "The Modern Dentist from a Medical Standpoint," Wm. Knight, Cincinnati, Ohio. 13. "Chancre of the Lip," G. T. Carpenter, Chicago, Ill. 14. "Oral Hygiene," G. F. Eames, Boston, Mass. 15. "The Legal Status of the Term 'Reputable' as applied to Dental Colleges," Chas. Chittenden, Madison, Wis. 16. "Auto-infection of the Mouth," G. L. Parmele, Hartford, Conn. 17. "Dento-facial Orthopedia," W. E. Walker, New Orleans, La.

Dentists desiring to become members of the Section can do so by obtain-

ing credentials from their state or local dental society, and presenting them, with the sum of five dollars, to the treasurer of the association. This sum includes the *Journal* of the association for one year. All dentists are invited to attend and take part in the discussions.

A. H. PECK, *Chairman*,  
EUGENE S. TALBOT, *Sec'y*.

## NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE nineteenth annual convention of the National Association of Dental Faculties will convene in the ball-room of the International Hotel, Niagara Falls, N. Y., July 24th next. The executive committee will meet at 11 A.M. July 23d. All colleges are respectfully referred to the rule requiring that their annual announcement be in the hands of the executive committee at this meeting.

H. B. TILESTON, *Pres.*,  
S. W. FOSTER, *Sec'y Ex. Com.*,  
N. A. D. F.

## NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE nineteenth annual session will convene at the International Hotel, Niagara Falls, on Friday, July 25, 1902, and continue in session until adjournment. It is earnestly hoped that this session will see a larger representation of delegates than any heretofore held. Every state is asked to make provision now to send delegates.

Niagara Falls is an ideal place for meeting, and the International Hotel is the best, the service and appointments first-class; the rates will be according to location of room. Rates from \$3.50 to \$4.50 per day, being a reduction of fifty cents per day from regular rates. It is expected that the usual reduction in railroad fare will be arranged in time. Additional notice will be given in the July journals.

J. ALLEN OSMUN, *Sec'y*.

## INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF DENTAL EDUCATION.

TO DENTAL FACULTIES, DENTAL BOARDS, AND ALL WHO ARE INTERESTED IN DENTAL EDUCATION.

THE second annual meeting of the International Dental Federation and International Commission of Dental Education will convene in Stockholm, Sweden, August 15 to 20, 1902.

On August 12th, immediately preceding the meeting of the Federation, the American Dental Society of Europe will convene. Within the same week the meeting of the International Advisory Boards of the Committee on Foreign Relations of the National Association of Dental Faculties of the United States will meet also. The date of the meeting of the National Dental Association of the United States has been changed to July 28th and the meeting of the National Association of Dental Faculties to July 24th, both at Niagara Falls.

The importance of the meeting of the International Commission of Educa-



tion, attended as it will be by the leading dental educators of Europe, and of the International Advisory Boards of the National Association of Dental Faculties of the United States, cannot be overestimated.

The relations of American dental institutions of learning to similar institutions throughout the world should be better understood, and it will be through the work of these meetings that the most approved methods of teaching at home and abroad will be fully considered and improved.

The action of the societies in both Europe and America in unanimously changing the dates of their meetings, the former having postponed their meeting ten days, while the latter meets eight days earlier than the date fixed last summer, is indeed gratifying to those most active in this great educational movement, as this arrangement of dates will make it possible for those who wish to attend the meetings at home and abroad to do so; besides, the action of the societies in changing dates shows the earnest desire of all to promote the interests of dental education throughout the world.

The following questions will be discussed by the International Commission of Education:

First: What preliminary knowledge is necessary for the dental student?

Second: What part of the medical and scientific subjects should be taken up, and at what time of the period of training should the study of them be pursued?

Third: What is the importance of theoretical technical knowledge?

Fourth: What is the importance of practical technical knowledge?

Fifth: What are the most appropriate names for the several titles now used throughout the world?

It is hoped that all who are interested will give this matter immediate and careful attention. The meeting of the National Dental Association in this country, July 28th to 31st, makes it necessary that we should sail as soon after this as possible. We have decided upon the "Friederich der Grosse," of the North German Lloyd line, which sails July 31st from New York city, and is due at Bremen August 10th. Different priced berths on the steamer may be had, some good ones as low as \$80.00. These berths will be assigned in the order of registration; 25 per cent. of price should be mailed at the time of application. The booking arrangements have been made through A. A. Andridge, Ph.D., Pike Opera Building, Cincinnati. Dr. Andridge's experience with rates and time-tables, in addition to his private parties, will be at the disposal of any who write. Further questions in reference to the side trips, extension of tickets, return sailing dates, all remittances, etc., should be sent to Dr. Andridge, while all information about the associations and their work, programs, addresses, etc., should be directed to the president.

By the International Commission of Education.

TRUMAN W. BROPHY, *President*,  
Marshall Field Building, Chicago.  
MAURICE ROY, *Secretary*,  
5 Rue Rouget de l'Isle, Paris.

---

### AMERICAN DENTAL SOCIETY OF EUROPE.

THE next meeting of the American Dental Society of Europe will be held in Stockholm, August 12th to 15th inclusive, 1902. A cordial invitation is extended to members of the American dental profession to meet with us.

This date will enable those attending the National meeting at Niagara Falls, July 28th to 31st, to attend the Stockholm meeting by sailing via Hamburg after that meeting.

L. J. MITCHELL, *Hon. Sec'y*,  
39 Upper Brook st., London, W.

Owing to the heavy booking of steamer berths, it would be well for intending voyagers to secure their return passages in advance. The best way to reach Stockholm is via Hamburg.

(1) Travel tickets only for the journey: Hamburg, Kiel, Corsor, Copenhagen, Malmo, Stockholm, return to Hamburg by same route, £6 14s. 3d. per adult first class, £5 5s. 3d. per adult second class.

(2) Travel tickets only for the route, Hamburg, Lubeck, and steamer direct to Stockholm, returning to Hamburg by same route, £4 4s. 3d. per adult first class, £3 4s. 9d. per adult, second class.

In the case of route No. 1, the validity is 45 days, and for route No. 2, the season. As early notice as possible should be given to secure accommodation. The times between Hamburg and Stockholm are as follows:

*Route No. 1.*—Dep. Hamburg 8.53 A.M. or 11.07 P.M., arr. Copenhagen 6.54 P.M. or 10.05 A.M. Dep. Copenhagen 7.45 P.M. or 11.15 A.M., arr. Stockholm 11.25 A.M. or 6.45 A.M.

*Route No. 2.*—Dep. Hamburg 12 NOON, 2 P.M., or 3.40 P.M., arr. Lubeck 1.21 P.M., 3.32 P.M., or 4.53 P.M. Dep. Lubeck about 6.15 P.M. Wednesdays and Saturdays, occupying about forty-two hours, but times for coming season not yet fixed.

Any further information that may be desired could be obtained from Messrs. Cook & Sons, 261 and 262 Broadway, New York.

## MARYLAND STATE DENTAL ASSOCIATION AND DISTRICT OF COLUMBIA DENTAL SOCIETY.

THE sixth annual union convention of the Maryland State Dental Association and the District of Columbia Dental Society will be held in Washington, D. C., June 6 and 7, 1902.

M. F. FINLEY, *Ch'man Publ. Com.*

## NORTHERN OHIO DENTAL ASSOCIATION.

THE forty-third annual meeting of the Northern Ohio Dental Association will be held in Cleveland, Ohio, June 9, 10, and 11, 1902.

You are specially invited to attend. W. T. JACKMAN, *Cor. Sec'y*.

## COLORADO STATE DENTAL ASSOCIATION.

THE sixteenth annual meeting of the Colorado State Dental Association will be held at the Alta Vista Hotel, Colorado Springs, June 17, 18, and 19, 1902.

A good meeting is assured. Special rates at the hotels. A cordial invitation is extended to the profession.

W. A. BRIERLY, *Sec'y*,  
70 Barth Block, Denver, Col.

## HARVARD DENTAL ALUMNI ASSOCIATION.

THE place of meeting of the Harvard Dental Alumni Association for the thirty-first annual banquet, Monday evening, June 23, 1902, has been changed from Young's Hotel, Boston, to the Harvard Union, Cambridge, Mass.

WALDO E. BOARDMAN, *Sec'y*.

### CONNECTICUT ODONTOLOGICAL SOCIETY.

THE Connecticut Odontological Society will hold its annual meeting at Sarin Rock, New Haven, Conn., July 1, 1902, at 2 P.M.

It has been the aim of the executive committee to make this a meeting of unusual interest and instruction. A cordial invitation is extended to all dentists and students to attend.

At the conclusion of the business of the day a Shore dinner will be served.

Applications for dinner tickets should be made to Dr. J. W. Mullery, Hartford, Conn.

CHAS. W. HOWGATE, *Sec'y*,  
Greenwich, Conn.

### SOUTH DAKOTA STATE DENTAL SOCIETY.

THE South Dakota State Dental Society will meet at Watertown, S. D., July 8, 9, and 10, 1902. Porcelain work with gasoline furnaces will be one of the features of entertainment. Orthodontia will also receive special attention. Clinics by leading dentists in gold and amalgam filling will be given.

G. W. COLLINS, *Acting Sec'y*.

### TENNESSEE DENTAL ASSOCIATION.

THE thirty-fifth annual meeting of the Tennessee Dental Association will take place at Mont Eagle, Tenn., beginning Tuesday, July 8, 1902, and continuing three days.

A program of unusual interest, both as to papers and clinics, has been prepared. Mont Eagle is a most popular summer resort, and thus a social as well as a professional treat is in store for those who attend. The railroads have made a one-and-one-third rate on the certificate plan and hotel accommodations are up to date and reasonable.

All ethical dentists are invited to be present and take part in the proceedings.

A. SIDNEY PAGE, *Sec'y*,  
Columbia, Tenn.

### WISCONSIN STATE DENTAL SOCIETY.

THE thirty-second annual meeting of the Wisconsin State Dental Society will be held at Milwaukee, Wis., July 15, 16, and 17, 1902. A cordial invitation is extended to all members of the profession to be present.

W. H. MUELLER, *Sec'y*,  
21 W. Main st., Madison, Wis.

### NEW JERSEY STATE DENTAL SOCIETY.

THE thirty-second annual meeting of the New Jersey State Dental Society will be held at the Auditorium, Asbury Park, commencing 10 A.M., Wednesday, July 16, 1902, and continuing the 17th and 18th. There will be good papers read and clinics performed. Sixty-four exhibitors will present the newest and best for the dental profession.

The Columbia Hotel will be headquarters, with rates of \$2.50 to \$3.00 per day.

CHARLES A. MEEKER, *Sec'y*,  
HERBERT S. SUTPHEN, *Asst. Sec'y*.



## VIRGINIA STATE DENTAL ASSOCIATION.

THE Virginia State Dental Association will hold its next annual session at Old Point Comfort on August 5, 6, and 7, 1902. This date follows the adjournment of the National Association at Niagara, and will give a fine opportunity for all desiring to continue their summer outing at most reasonable rates. All members of the profession are cordially invited to attend.

GEO. F. KEESEE, *Sec'y.*

## GEORGIA STATE BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Georgia will hold its regular annual meeting on June 10, 1902, in the city of Macon, for the purpose of examining applicants for license to practice dentistry, and for transacting such other business as may come before it.

All applicants will be required to exhibit their diplomas for record and examination before their names will be enlisted.

D. D. ATKINSON, *Sec'y,*  
Brunswick, Ga.

## NORTH CAROLINA STATE BOARD OF DENTAL EXAMINERS.

THE North Carolina State Board of Dental Examiners will meet Monday, Tuesday, and Wednesday, June 16, 17, and 18, 1902, at Raleigh, N. C. For further information write the undersigned.

R. H. JONES, *Sec'y,*  
Winston, Salem, N. C.

## PENNSYLVANIA BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Pennsylvania will conduct examinations in Philadelphia, June 24-27, 1902.

For papers and information address the Hon. James W. Latta, secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP, *Sec'y,*  
Williamsport, Pa.

## MASSACHUSETTS BOARD OF REGISTRATION IN DENTISTRY.

A MEETING of the Massachusetts Board of Registration in Dentistry, for the examination of candidates, will be held in Boston, Mass., June 25, 26, and 27, 1902.

Candidates who have applied for examination will report to the Secretary, Wednesday, June 25th, at 9.30 A.M., at Harvard Dental Infirmary, North Grove street, and come prepared with rubber-dam, gold, and instruments, to demonstrate their skill in operative dentistry. Anyone who wishes may bring his patient. As far as possible, patients will be furnished. The board in every instance selects the cavity to be filled. Partially prepared cavities never accepted.

The theoretic examination—written—will include operative dentistry, prosthetic dentistry, crown- and bridge-work, orthodontia, anatomy, histology, surgery, pathology, materia medica, therapeutics, physiology, bacteriology, anesthesia, chemistry and metallurgy, and will be held at Civil Service Rooms, State House, from Thursday, June 26th, at 9.30 A.M., until Friday P.M., June 27th.

All applications, together with the fee of twenty dollars, must be filed with the secretary of the board on or before June 18th, as no application for this meeting will be received after that date.

Every candidate for examination must be twenty-one years of age.

Application blanks may be obtained from the secretary.

Candidates who have taken an examination, and failed, and desire to come before the board again at this meeting are not required to fill out a second application blank, but must notify the secretary as above in order to be examined. The fee for third and subsequent examinations is five dollars.

G. E. MITCHELL, D.D.S., *Sec'y*,  
25 Merrimack street, Haverhill, Mass.

---

### NEW JERSEY BOARD OF DENTAL EXAMINERS.

THE New Jersey State Board of Registration and Examination in Dentistry will hold their next examination on the following dates: Monday, July 7th, Tuesday, 8th, and Wednesday, 9th, 1902, at the office of the secretary, J. Allen Osmun, 588 Broad street, Newark, N. J.

All applicants for examination must have their application in two weeks prior to the examination. J. ALLEN OSMUN, *Sec'y Dental Commission*.

---

### SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

THE next meeting of the South Dakota State Board of Dental Examiners for the examination of candidates will be held at Watertown, July 8, 9, and 10, 1902. No applicant will be admitted unless he present satisfactory evidence of having been in the active practice of dentistry continuously for at least three years immediately preceding the date of examination, or that he is a graduate from a reputable dental school. All applicants must bring operating outfit, dental engine, and materials, prepared to do fillings of all kinds, or bridge-work.

Applications must be made to the secretary in writing at least one week previous to the date of examination. Candidates must be on hand at 9 A.M., July 8, 1902, at Dr. C. W. Stutenroth's office. None will be received later.

G. W. COLLINS, *Sec'y*,  
Vermillion, S. D.

---

### VERMONT BOARD OF DENTAL EXAMINERS.

A MEETING of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, July 9, 1902, at 2 P.M. for the examination of candidates to practice dentistry. The examination will be in writing, and will include anatomy, physiology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anesthesia, operative and prosthetic dentistry, together with an operation in the mouth. Candidates must come prepared with instruments, rubber dam and gold.

Applications, together with the fee, ten dollars, must be filed with the secretary on or before July 1st.

GEO. F. CHENEY, *Sec'y*,  
St. Johnsbury, Vt.

# A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

- Amoëdo** (O.) Contribution à l'étude des travaux à point en prothèse dentaire. Paris, 1900, Lahure, 22 pp. 8°.
- Attias** (I.) \*De la rhino-pharyngite et amygdalite chronique et de ses conséquences chez les enfants. Paris, 1901, L. Boyer, 79 pp. 8°.
- Audy** (A.-P.-V.) \*Des accidents d'éruption des dents permanentes autres que les dents de sagesse. Paris, 1901, L. Boyer, 94 pp. 8°.
- Béliard** (M.) \*Essai critique sur le traitement des sinusites maxillaires. Paris, 1901, L. Boyer, 70 pp. 8°.
- Berest** (A.) \*Des troubles nerveux chez les amygdaliens. Paris, 1901, L. Boyer, 55 pp. 8°.
- Blum** (A.) \*Contribution à l'étude du rôle des dents dans quelques infections (angine de Ludwig, adénite tuberculeuse cervicale). Paris, 1901, L. Boyer, 62 pp. 8°.
- Bréavoine** (G.) \*Traitement chirurgical de la paralysie faciale d'origine traumatique par l'anastomose spino-faciale. Paris, 1901, Instit. Scient., 67 pp. 8°.
- Bruck** (W.) Die Einführung der Zahnpflege in Heer und Marine. Breslau, 1901, S. Schottlaender, 1 p. l., 54 pp. 8°.
- Collard** (J.) \*Essai sur l'hygiène dentaire publique. Paris, 1900, G. Steinheil, 60 pp. 8°.
- Coudret** (P. E. E.) \*De l'extirpation totale de la glande sous-maxillaire dans les cas de calculs salivaires. Bordeaux, 1901, Y. Cadoret, 62 pp. 8°.
- Crauste** (J. F. H.) \*Contribution à l'étude des divisions congénitales de la langue. Bordeaux, 1901, Y. Cadoret, 38 pp. 8°.
- Dugué** (P.) \*Contribution à l'étude clinique de l'épithélioma de la lèvre inférieure. Paris, 1901, P. Delmar, 72 pp. 8°.
- Eckley** (W. T.) & **Corinne B. Eckley**. Regional anatomy of the head and neck. Philadelphia & New York, 1902, Lea Brothers & Co., 240 pp. 8°.
- Esser** (K. W. H.) \*Zur Behandlung der Retropharyngeal-abscesse. Kiel, 1901, Schmidt & Klaunig, 16 pp. 8°.
- Ferrier** (P.) \*Relations de nutrition entre le squelette et les dents; odontocie, ostéocie. Paris, 1900, G. Carré & C. Naud, 100 pp. 8°.
- Frison** (L.-A.) \*De la nécrose de l'os intermaxillaire. Paris, 1901, L. Boyer, 120 pp. 8°.
- Frossard** (H.) \*Des rapports entre l'état du système dentaire et les accidents buccaux chez les syphilitiques. Paris, 1901, G. Steinheil, 72 pp. 8°.
- Godon** (C.) \*L'évolution de l'art dentaire. L'école dentaire, son histoire, son action, son avenir. Paris, 1901, J. B. Baillière & fils, 366 pp., 2 tab. 8°.
- Hentze** (A. A.) \*Die Zahnhalscaries bei Phthisikern. Kiel, 1900, Nord-Ostsee-Zeitung, 25 pp., 1 l. 8°.
- Houpert** (P. M. R.) \*Kystes épidermiques du frein de la langue chez le nouveau-né. Bordeaux, 1901, G. Gounouilh, 27 pp., 2 l. 8°.
- Jahan** (A.-C.-J.) \*Des caries récidivantes. Paris, 1900, L. Boyer, 58 pp. 8°.
- Krug** (H.) \*Beitrag zur Stomatitis aphthosa. Kiel, 1901, P. Peters, 18 pp., 1 l. 8°.
- Lalande** (L.-B.) \*Contribution à l'étude des tumeurs ostéoides du sinus maxillaire. Paris, 1901, L. Boyer, 61 pp. 8°.
- Lavergne** (J.-F.-H.) \*Essai sur les sarcomes, du maxillaire supérieur. Etude clinique et pronostique. Paris, 1901, G. Steinheil, 88 pp. 8°.
- MacDowell** (J. N.) Orthodontia. Chicago, 1901, E. H. Colegrove.
- Perrot** (H.) \*Infection de la gland parotide chez le nouveau-né. Paris, 1901, L. Boyer, 65 pp. 8°.
- Peyrot** (J.) \*Quelques considerations sur le fonctionnement des services dentaires dans les hôpitaux. Paris, 1900, L. Boyer, 101 pp. 8°.
- Piton** (H.-M.-A.) \*Traitement local de la glossite tertiaire par le sublimé. Paris, 1901, L. Boyer, 60 pp. 8°.
- Rennefahrt** (K. R.) \*Drei Fälle von Unterbindung der Carotis communis zur Verhinderung des Wachstums inoperabler Krebse des Gesichts. Kiel, 1901, Schmidt & Klaunig, 15 pp., 2 l. 8°.
- Robin** (E.) \*Contribution à l'étude des malformations dentaires chez les idiots, hystériques et épileptiques. Paris, 1901, Vigot Frères, 62 pp. 8°.
- Rosenow** (K.) \*Ueber congenitale Geschwulst der Zunge (Epiglossus). Kiel, 1901, H. Fiencke, 19 pp., 1 l. 8°.
- Siffre** (A.-F.) \*Contribution à l'étude des anomalies dentaires. Le redressement chirurgical de l'antagonisme inverse. Paris, 1901, L. Pochy, 112 pp. 8°.
- Tarrade** (J.) \*Considerations sur l'hygiène dentaire dans les établissements d'enseignement. Paris, 1901, J. Rousset, 46 pp., 1 l. 8°.



- Thoumire (E.)** \*Considerations anatomiques sur le sinus maxillaire; diagnostic et traitement de l'empyème latent par l'orifice naturelle. Paris, 1901, L. Boyer, 64 pp. 8°.
- Amoëdo (O.)** Les dents du Pithecanthropus erectus, de Java. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 21-28.—**Andresen (V.)** Erscheinungen bei der Zahncaries; mikroskopischer Befund. Deutsche Monatschr. f. Zahn., Leipz., 1902, xx, 97-104.—**Arkövy (J.)** Aphorismen zur Therapie der Pulpagangrän. J. f. Zahn., Berl., 1902, xvii, 50-52.—**Arrington (B. F.)** Dentistry as a vocation for profit, especially in North Carolina. Internat. Dent. J., Phila., 1902, xxiii, 239-243.—**Balla-chey (F. A.)** Amalgam; the place it has won in dentistry. Dental Cosmos, Phila., 1902, xlv, 361-367.—**Barber (Heber B.)** [1869-1902.] (Obituary.) *Ibid.*: 414.—**Bardesco.** Relativement à l'anesthésie avec kélène. Bull. et mém. Soc. de chir. de Bucarest, 1901-2, iv, 64 n-64 p.—**Barnes (C. H.)** The next step in the prevention of caries. Dental Cosmos, Phila., 1902, xlv, 334-339.—**Bauby (E.)** & **Dalous.** Leucoplasie buccale en voie de transformation épithéliomateuse. Toulouse méd., 1899, 2. s., i, 171-177.—**Baumgarten (E.)** Ueber Schlingbeschwerden bei Erkrankungen des unteren und oberen Rachenteiles. Samml. zwangl. Abhandl. a. d. Geb. d. Nasen-, Ohren-, Mund- u. Halskr., Halle a. S., 1901, v, 361-382.—**Beach (H. H. A.)** Giant-celled sarcoma of lower jaw. Boston, M. & S. J., 1902, cxl, 382.—**Bendix (E.)** Ueber alimentäre Glycosurie nach Narkosen. Centralbl. f. Stoffwechsel-u. Verdauungskr., Götting., 1902, iii, 149-151.—**Benninghove.** Der deutsche Zahnkünstler. Zahntech. Rundschau, Berl., 1902, Nos. 502-503.—Disinfection und antiseptis. Zahnkunst., Bresl., 1902, vi, Nos. 5; 6; 7.—**Bertelli (D.)** L'arteria sottomentale. Monitore zool. ital., Firenze, 1902, xiii, 39.—**Birgfeld (C.)** Selbstanfertigung eines leistungsfähigen, billigen elektrischen Ofens für Porzellanfüllungen. Deutsche Monatschr. f. Zahnk., Leipz., 1902, xx, 105-107.—**Black (G. V.)** Management of the infirmary clinic in dental schools. Dental Cosmos, Phila., 1902, xlv, 309-316.—**Bostock (A. L.)** Articulation of artificial dentures and retention of these in edentulous cases. J. Brit. Dent. Ass., Lond., 1902, xxiii, 144-151.—**Briggs (W. A.)** Mentholization of the air passages in ether anesthesia. Occidental M. Times, San Fran., 1902, xvi, 139.—**Brown (P. K.)** A fatal case of acute primary infectious pharyngitis with extreme leukopenia. Am. Med., Phila., 1902, iii, 649-651.—**Brown (R. C.)** Follicular tonsillitis. Med. Rec., N. Y., 1902, lxi, 324-329.—**Buret (F.)** Gingivite syphilitique simulant la stomatite mercurielle; guérison par le traitement hydrargyrique. Progrès dent., Par., 1902, xxix, 92-96.—**Burström (H.)** Die schwedischen Cariesfrequenzuntersuchungen. J. f. Zahn., Berl., 1902, xvii, 37-42.—**Capdepont.** Quelques considérations anatomiques et pathologiques sur le sac folliculaire. Rev. de stomatol., Par., 1902, ix, 134-145. [Discussion], 166-171.—**Capon (W. A.)** Preparation of cavities for porcelain. Dental Cosmos, Phila., 1902, xlv, 377-385.—**Case (C. S.)** Orthopédie dento-faciale. Odontologie, Par., 1902, 2. s., xiv, 159-170.—**Cestan (E.)** Chondro-sarcome dumassif maxillaire supérieur. Toulouse méd., 1901, 2. s., iii, 190.—**Chompret.** Nécrose partielle du maxillaire supérieur d'origine grippale. Rev. de stomatologie, Par., 1902, ix, pp. 154-163.—**Christ (J.)** Zur Hygiene des Zahnärztlichen Berufs. Deutsche Zahnärztl. Wchnschr., Berl., 1901-2, iv, 521-524.—**Clauda.** Un cas d'ulcération tuberculeuse du voile du palais à forme perforante. Arch. internat. de laryngol. [etc.], Par., 1902, xv, 34-36.—**Clement (R. H.)** Anesthetics. Correo internac. odont., Madrid, 1901, vi, 2656-2665.—**Combe (A.)** Note sur un corps étranger volumineux de l'oesophage; épreuve radiographique. Rev. de stomatol., Par., 1902, ix, 145-148. [Discussion], 166.—**Condit (A. S.)** A method of forming sectional gold crowns, bands, or open faced crowns, upon low fusible metal dies instead of plaster models or natural teeth. Dental Summary, Toledo, 1902, xxii, 179-182.—**de Courmelles (F.)** De l'action de la lumière chimique froide sur le tissu osseux en général et les maxillaires en particulier. Odontologie, Par., 1902, 2. s., xiv, 171-179. [Discussion], 185.—**Etude électrique.** *Ibid.* [Discussion], 184.—**Crawford (D.)** [A salivary calculus removed from Wharton's duct.] Liverpool M.-Chir. J., 1902, xxii, 145.—**Danlos.** Forme rare de chancre lingual. Bull. Soc. franç. de dermat. et syph., Par., 1902, xiii, 48.—**Hérédosyphilis sans lésion dentaire.** *Ibid.*: 49.—**Déhu (P.)** Un cas de pelade d'origine dentaire chez une hystérique tuberculeuse (sommation peladogène de Jacquet). Bull. et mém. Soc. méd. d. hôp. de Par., 1902, 3. s., xix, 229-232.—**Dietrich.** Die Zulassung von Zahn-technikern zum zahnärztlichen Staats-examen. Zahntech. Rundschau, Berl., 1902, No. 498.—**Dorn (R.)** Ueber einige neuere pharmaceutische Präparate und deren Anwendung in der Zahnheilkunde. J. f. Zahn., Berl., 1902, xvii, 47-50.—*Also:* Wien. Zahnärztl. Monatschr., 1902, iv, 59-69.—**Doud (Albert.)** [1842-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 413.—**Dupin.** Fistule parotidienne d'origine tuberculeuse; injections interstitielles d'huile antiseptique; guérison. Toulouse méd., 1901, 2. s., iii, 102.—**Dupin & Grimoud.** Fistule de la parotide gauche; guérison par les injec-

- tions de cocaine et d'huile antiseptique. *Ibid.*: 63-65.—**Earp** (S. E.) Clinical significance of the tongue. *Med. & Surg. Monitor*, Indianap., 1902, v, 108-110.—**Eberhard** (H.) jr. Anleitung zur Selbstanfertigung einer elektrischen Mundbeleuchtungs-lampe sowie eines Galvanokauters. *Zahnkunst*, Bresl., 1902, vi, Nos. 8; 10.—**Eden** (D. R.) A case of odontome. *Intercolon. M. Cong. Australas.* Tr. 1899, Brisbane, 1901, 287-289.—**Edwards** (R.) An appliance for the retraction of bicuspid and incisors. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 136-139.—**Eisendrath** (D. N.) The accidents of anesthesia, their prevention and treatment. *Chicago M. Recorder*, 1902, xxii, 318-326. [Discussion], 341-345.—**Embley** (E. H.) The causation of sudden death during the administration of chloroform. [*Abstr.*]. *Proc. Physiol. Soc. Lond.*, 1902, pp. 1-iv.—**Emerson** (L.) Maxillary antral supuration, with report of a case. *Am. Med.*, Phila., 1902, iii, 652.—**Erdmann** (J. F.) Report of a case of removal of the Gasserian ganglion. *Med. News*, N. Y., 1902, lxxx, 683.—**Ernsmere** (J. B.) Some additional light on the etiology of pyorrhea alveolaris. *Dental Cosmos*, Phila., 1902, xlv, 359-361.—**Fasola** (G.) Contributo clinico alla conoscenza dell'innervazione gustatoria. *Riv. di patol. nerv.*, Firenze, 1902, vii, 49-57.—**Fischer** (L.) A case of stomatitis gangrenosa (Noma). *Am. J. M. Sc.*, Phila., 1902, n. s., cxxiii, 643-647.—**Fisher** (W.) Racial changes. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 129-136.—**Forberg** (E.) Is the symmetrical extraction of the first permanent molars justifiable? *Ibid.*: 65-93.—**Forbes** (A. M.) Syphilis. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 241-252.—**Forshaw** (C. F.) A tumour of the superior maxilla. *Med. Times & Hosp. Gaz.*, Lond., 1902, xxx, 227.—**Franke**. Hygiene des Zahnärztlichen Berufes. *Deutsche Zahnärztl. Wchnschr.*, Berl., 1901-2, iv, 497-501.—**Friedemann**. Ueber die Herstellung von Serienschritten durch die Pulpa. *Deutsche Monatschr. f. Zahnk.*, Leipz., 1902, xx, 129-131.—**Fritzsche** (C.) Ueber Unterkieferprothesen und über einen neuen künstlichen Unterkiefer. *Med. Rundschau*, Berl., 1902, Nos. 125, 126, 127, 128.—*Also*: Zahnärztl. Rundschau, Berl., 1901, x, No. 495; 1902, xi, Nos. 496, 498, 499, 501, 502.—*Also*: Zahntechn. Reform, Berl., 1902, xxi, 46-48.—**Fuchs** (J.) Mitteilung über die Wirkung des Tropicocains. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 499.—**Gardner** (W. T.) Diagnosis of a tooth in the lung and verification. *Brit. M. J.*, Lond., 1902, i, 835.—**Gellé**. Le voile du palais et la voix de fausset. *Compt. rend. Soc. de biol.*, Par., 1902, 11. s., iv, 266.—**Gemmel** (A. B.) Anaesthetist and operator. *Liverpool M.-Chir. J.*, 1902, xxii, 112-130.—**Gerota**. Calcul salivaire. *Bull. et mém. Soc. de chir. de Bucarest*, 1901-2, iv, 161.—**Ghose** (A. P.) Case of acute tonsillitis followed by subacute rheumatism. *Indian M. Rec.*, Calcutta, 1902, xxii, 260.—**Girard**. Sur l'uranostaphy-
- lorraphie. *Assoc. franç. d. chir. Proc.-verb.* [etc.], Par., 1901, xiv, 410-421.—**Good** (R.) Pyorrhea alveolaris. *Dental Cosmos*, Phila., 1902, xlv, 347-355.—**Goodale** (J. L.) Retrograde Veränderungen der Gaumentonsillen. *Arch. f. Laryngol. u. Rhinol.*, Berl., 1901-2, xii, 399-405, 1 pl.—**Goslee** (H. J.) The shell or telescope crown. *Items Interest*, N. Y., 1902, xxiv, 241-253.—**Graham** (M.) Foreign body in tongue of Irish terrier. *Vet. Rec.*, Lond., 1901-2, xiv, 592.—**Graham** (O.) Acute oedema of the tongue. *J. Comp. M. & Vet. Arch.*, Phila., 1902, xxiii, 172-174.—**Grayston** (W. C.) On science in dentistry and a few experiments in gold filling. *Austral. J. Dent.*, Melbourne, 1902, v, 156-166.—**Greely** (H.) A combination of plain and gum teeth. *Dental Cosmos*, Phila., 1902, xlv, 329-332.—**Green** (G. H.) Approximal fillings in bicuspid and molars. *Dental Digest*, Chicago, 1902, viii, 275-281.—**Grieshammer**. Ueber die Exstirpation des Ganglion Gasserii. *Jahresb. d. Gesellsch. f. Nat.- u. Heilk. in Dresd.*, München, 1900-1901, 57.—**Gugenheim**. Ein Fall von Tuberkulose des Pharynx. *Sitzungsb. d. aerztl. Ver. Nürnberg.*, 1900, München, 1901, 76.—**Guy** (W.) Técnica de la extracción. *Correo internac. odont.*, Madrid, 1901, vi, 2649-2656.—**H.** (J.) Necrosis eboris. *Deutsche Zahnärztl. Ztg.*, München, 1901, No. 4; 1902, Nos. 5; 7.—**Hall** (A. D.)—Some peculiar cases of extraction. *Dental Cosmos*, Phila., 1902, xlv, 372-374.—**Hartwig** (F.) Eugenol als Antisepticum und Anästheticum in der Zahnheilkunde. *Wien. Zahnärztl. Monatschr.*, 1902, iv, 54-59.—**Hartz** (H. J.) Tonsilar and peritonsilar suppuration. *Am. Med.*, Phila., 1902, iii, 646-649.—**Haskell** (L. P.) Continuous gum dentures. *Dental Digest*, Chicago, 1902, viii, 288-291.—Peculiarities of the left side of the mouth. *Dental Summary*, Toledo, 1902, xxii, 177-179.—**Haynes** (I. S.) Complete bony ankylosis of the right temporomaxillary articulation. *Ann. Surg.*, Phila., 1902, xxxv, 517.—**Heermann**. Zur Blutstillung nach Tonsillotomie. *Arch. f. Laryngol. u. Rhinol.*, Berl., 1901-2, xii, 467.—**Heise** (O. N.) Dentistry as a specialty of medicine. *Dental Reg.*, Cincin., 1902, lvi, 183-196.—**Hirtz** (E.) Les stomatites urémiques et leur diagnostic. *Semaine méd.*, Par., 1902, xxii, 109.—**Huges** (M.) Is amendment to the dentists act necessary to the welfare of the profession? *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 151-161.—**Hunt** (G. E.) Chronic alveolar abscesses. ΔΕΣΜΟΣ [Desmos], Indianap., 1901, viii, 1-10.—**Howell** (R. B.) The action of obtundents. *Dental J.*, Ann Arbor, 1902, xi, No. 2, 13-18.—**Ingals** (E. F.) Should hypertrophied tonsils be removed? *Ilinois M. J.*, Springfield, 1901-2, n. s., iii, 533.—**Jacquet** (L.) Pelade symétrique, par éruption précoce de la dent de sagesse. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1902, 3. s., xix, 279-281.—**Jessen** (E.) Zur Frage der Schuluntersuchungen. *Zahnärztl. Rundschau*, Berl., 1902, xi, No.



- 500.—**Johnson** (G. E.) The human face and articulate speech divine. *Dental Cosmos*, Phila., 1902, xlv, 322-328.—**Jousset** (A.) Pathologie de l'amygdale linguale. Nord méd., Lille, 1902, viii, 61-64.—**Jüterbock** (G.) Ueber gegossene Goldgebissplatten. *Zahnkunst*, Bresl., 1902, vi, No. 4.—**Kalisch**. Die Bedeutung populärer Vorträge auf dem Gebiete der Zahnhygiene. *Deutsche zahnärztl. Wehnschr.*, Berl., 1901-2, iv, 509-511.—**Kirk** (E. C.) Some account of the work of Dr. Michaels. *Internat. Dent. J.*, Phila., 1902, xxiii, 229-234.—**Knwles** (W. A.) A case of sarcomatous epulis. *Pacific Dent. Gaz.*, San Fran., 1902, x, 230-232.—**Körbitz** (A.) Ueber die Befestigung von Porzellanfüllungen. *Deutsche Zahnärztl. Wehnschr.*, Berl., 1901-2, iv, 189-192.—**Körner**. Entstehung und Verhütung der Caries der Zähne. *Verhandl. d. Ver. d. Aerzte zu Halle a. S.*, München, 1900-1901, 116-118.—**Köhler** (C. H.) Deformities of the superior maxilla. *Dental Rev.*, Chicago, 1902, xvi, 262-271. [Discussion], 280-290.—**Kraus** (W. C.) The head of degenerates. *Dental Digest*, Chicago, 1902, viii, 267-275.—**Kronfeld** (R.) Neuerungen auf dem Gebiete der zahnärztlichen Therapie. *Centralbl. f. d. ges. Therap.*, Wien, 1902, xx, 193-202.—**Labes** (M.) Einige Vorschläge zur Bekämpfung der zahntechnischen Abzahlungs- und Reisegeschäfte. *Zahnkunst*, Bresl., 1902, vi, Nos. 6; 7.—**Labium** (et palatum) fissum. *Kindersp. in Basel. Jahresb.* (1900), 1902, xxviii, 148.—**Lazarus** (E.) Die Ausübung der Zahnheilkunde im Umherziehen durch Nichtapprobierte. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 498.—**Le Breton** (P.) A second contribution to the study of anesthesia by nitrous oxide gas and ether. *Phila. M. J.*, 1902, ix, 586-588.—**Lederer** (W. J.) Asepsis in dental surgery. *Med. Rec.*, N. Y., 1902, lxi, 611.—**Leist** (G.) Die Herstellung cheoplastischer Obergebisse. *Zahnrech. Reform*, Berl., 1902, xxi, 34.—**Lenoir** (O.) Contribution to the study of antrectomy, etc. *Ann. Otol., Rhinol. and Laryngol.*, St. Louis, 1902, xi, 64-121.—**Lermoyez & Gasne**. Goutte aiguë du pharynx. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1902, 3. s., xix, 283-290.—**Loewe** (M.) Moderne Mundwässer. *Deutsche zahnärztl. Ztg.*, München, 1902, Nos. 10; 11.—**Lofton** (L.) A phenomenon observed on the tongue in acute malarial infection. *N. York M. J.*, 1902, lxxv, 636.—**Logan** (F. E.) Mistakes and failures in crown and bridge-work. *Dental Reg.*, Cincin., 1902, lvi, 163-182.—**McCardie** (W. J.) Some remarks on purity in anæsthetics. *Midland M. J.*, Birmingham., 1901-2, i, 90-92.—**Maass** (H.) Demonstration eines Falles von Kiefercyste. *Berl. klin. Wehnschr.*, 1902, xxxix, 242.—**Macricar** (N.) Marginal ulceration of the gums occurring among natives of East Central Africa. *J. Trop. M.*, Lond., 1902, v, 52.—**Madden** (J. J.) Surface markings upon the teeth. *Dental Cosmos*, Phila., 1902, xlv, 367-372.—**Madzsar** (J.) Im Anschluss an Morbus maculosus auftretende Veränderungen in der Mundhöhle. *Ungar. med. Presse*, Budapest, 1902, vii, 203.—Morbus maculosus? kapcsán fellépett szájüri tünetek. [Symptoms of the buccal cavity developed after . . .] *Orvosi hetil.*, Budapest, 1902, xlv, 142.—**Mahling** (E.) Intoxication par le bismuth. *Rev. trimest. suisse d'odont.*, Zürich & Genève, 1902, xii, 76.—**Malherbe** (A.) Nouveau procédé pour l'anesthésie générale par le chlorure d'éthyle. *Assoc. franç. de chir. Proc.-verb.* [etc.], Par., 1901, xiv, 295-302.—**Malloizel**. Etude des conditions de la sécrétion salivaire de la glande sous-maxillaire. *Compt. rend. Soc. de biol.*, Par., 1902, II. s., iv, 329-331.—**Marey**. Déformation de la mâchoire par les actions musculaires chez les vieillards édentés. *Ibid.*: 143.—**Marion** (G.) Un nouveau cas de sarcome de la langue. *Arch. gén. de méd.*, Par., 1902, n. s., vii, 331-334.—**Martin** (C.) De l'utilité du traitement des careis des molaires temporaires. *Rev. trimest. suisse d'odont.*, Zürich & Genève, 1902, xii, 32-36.—**MaWhinney** (E.) Local anesthetics. *Dental Rev.*, Chicago, 1902, xvi, 255-262. [Discussion], 302-320.—**May** (W. J.) A case of submental sinus, a sequela of influenza, treated by root filling. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 139-143.—**Meisenbach** (A. H.) Epithelioma of the lower jaw. *St. Louis M. Rev.*, 1902, xlv, 225.—**Messerschmitt** (F.) Operative prophylaxis of the oral cavity. *Dental Digest*, Chicago, 1902, viii, 291-295.—**Méthode** du professeur Angle pour la régularization et la rétention des dents et pour la traitement des fractures des mâchoires. *Progrès dent.*, Par., 1902, xxix, 65-79.—**Moderne** Mundwässer. *Zahnrech. Reform*, Berl., 1902, xxi, 62.—**Montini** (A.) Anesthesia cloroformica. *Corriere san.*, Milano, 1902, xiii, 145-151.—**Moréstin** (H.) Cancres simultanés et indépendants des deux lèvres. *Presse méd.*, Par., 1902, i, 303-305.—**Traitement** du cancer de la langue. *Assoc. franç. de chir. Proc.-verb.* [etc.], Par., 1901, xiv, 421-429.—**Morrison** (W. A.) The life-history of a human tooth. *Austral. J. Dent.*, Melbourne, 1902, v, 150-155.—**Moscato** (P.) Epitelioma al labbro superiore sinistro con disturbi psichici post-operativi. *Rassegna internaz. d. med. mod.*, Catania, 1900-1901, iii, 333-335.—**Moure** (E. J.) De l'angine ou pharyngite granuleuse. *J. méd. de Bordeaux*, 1902, xxxii, 165-167.—**Moyer** (S.) The enamel of the central incisor. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 252-259.—**Navy** (The) dental bill. [Edit.] *Dental Cosmos*, Phila., 1902, xlv, 403.—**Necessaria** (Es) la pulpa dental de las adultos? *Correo internac. odont.*, Madrid, 1901, vi, 2644-2649.—**Nieriker** (H.) Die elastische Inhalationsmaske zur Ausführung von Narkosen. *Schweiz. Vrtljschr. f. Zahnh.*, Zürich & Genève, 1902, xii, 1-13.—**Noble** (Henry Bliss). [1832-1902] (Obituary.) *Dental Cosmos*, Phila., 1902, xlv, 413, port.—**Noble** (J. H.) To adjust



- the parts of a broken vulcanite denture and get a model of the same. *Ibid.*: 340.
- Noebel**. Zur Methodik der lokalen Anästhesie in den oberen Luftwegen. Samml. zwangl. Abhandl. a. d. Geb. d. Nasen-, Ohren-, Mund- u. Halskr., Halle a S., 1902, vi, 11-27.—**Nogué**. Le facteur moral dans l'anesthésie. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 28-32.—**Onodi** (A.) A gége kozponti beidegzésének tana. [The science of the central innervation of the throat.] Orvosi hetil., Budapest, 1902, xlv, 185.—**Ottolengui** (R.) The availability and construction of porcelain fillings. Items Interest, N. Y., 1902, xxiv, 254-263. [Discussion], 276-293.—**Palem** (M. A.) [Artificial tumor of the cheek.] Zubovrach. vestnik, St. Petersburg., 1901, xvii, 813-815.—**Parreidt** (J.) Ein Fall von acutem eitrigem Kieferhöhlenkatarrh. Deutsche Monatschr. f. Zahnh., Leipzig., 1902, xx, 108-120.—**Peirce** (C. N.) The past and present in dentistry. Dental Cosmos, Phila., 1902, xlv, 316-322.—**Pelnár** (J.) Bacteriologische Versuche über die Wirkung unserer Mundwässer. Wien. klin. Rundschau, 1902, xvi, 197; 222.—**Péaire** (M.) Note sur deux mille anesthésies générales par le chloroforme. Assoc. franç. de chir. Proc.-verb. [etc.], Par., 1901, xiv, 285-295.—**Pinnock** (R. D.) A successful case of direct injection of strychnine into the wall of the left ventricle of the heart of a patient apparently moribund during anaesthesia. Intercolon. M. Cong. Australas. Tr. 1899, Brisbane, 1901; 277.—**Pöhn** (E.) Beitrag zur Behandlung verv- und wurzelkranker Zähne. Zahnkunst, Bresl., 1902, vi, No. 12.—**Polscher** (A.) Ueber das Verhalten einiger Metalle und Kautschuks zu einander. Zahntech. Rundschau, Berl., 1902, No. 499.—Zahnbeläge und Speichelsteine. Zahntech. Reform, Berl., 1902, xxi, 51; 59.—Zahnluckenschmerz. *Ibid.*: 24-26.—**Pólya** (S.) & **D. Navratil**. Vizsgálatok a pofa nyálkahártyájának nyirokereiről. [Experiments on the lymph canals of mucous membrane of the cheek.] Orvosi hetil., Budapest, 1902, xlv, 141.—**Pólya** (S. J.) Casuistikus adatok a pofarákok operálásához. [Statistical contributions on operations for cancer of the cheek.] *Ibid.*: 51; 71; 90; 111; 131; 151.—**Poncet** (A.) & **L. Berard**. De l'actinomycose humaine en France; sa fréquence; son pronostic éloigné. Bull. Acad. de méd., Par., 1902, 3. s., xlvii, 424-432.—**Poroshin** (N. N.) [Pathological changes of parenchymatous organs in chloroform anaesthesia.] Dnevnik Syezda Obsh. Russk. Vrach. v. pamyat Pirogova, Kazan, 1899, vii, 485-487.—**Powell** (T. E.) Influence of sexuality in the development of the teeth. Pacific Dent. Gaz., San Fran., 1902, x, 242-247.—**Quackenbush** (C. A.) How an abscessed tooth caused the death of the patient. Dental J., Ann Arbor, 1902, xi, No. 2, 9-13.—**Ranke** (J.) Ueber den Zwischenkiefer. Cor.-Bl. d. deutsch. Gesellsch. f. Anthropol. [etc.], München, 1901, xxxii, 96-102.—**Rationeller** (Ein) Artikulator. Zahntech. Reform, Berl., 1902, xxi, 12-15.—**Recent** (The) chloroform fatality. Brit. J. Dent. Sc., Lond., 1902, xlv, 260-262.—**Regnier** (L. R.) & **H. Didsbury**. Nouveau procédé d'anal-gésie des dents à l'aide de l'électricité. Progrès. méd., Par., 1902, 3. s., xv, 202.—**Reissenbach**. Das Tropicacain Merck. Deutsche zahnärztl. Ztg., München, 1902, No. 6.—**Reitter** (C.) Empyème du sinus maxillaire et péritonite aiguë. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 74-76.—**Renaut** (J.) Action nocive du chloroforme sur le rein; administration de l'éther anesthésique par le mode interrompu. Rev. gén. de clin. et de therap., Par., 1902, xvi, 225.—**v. Ritter** (A.) Sachliche Erwägungen zu dem Vortrage von Herrn Dr. Scheuer über Porzellananfüllungen. Wien. zahnärztl. Monatschr., 1902, iv, 52.—**Robertson** (R.) A case of enchondroma of the submaxillary gland. Indian M. Gaz., Calcutta, 1902, xxxvii, 94.—**Robin** (P.) Conseils pratiques sur l'emploi du thermocautère en chirurgie buccale et péri-buccale. Rev. de stomatol., Par., 1902, ix, 149-154.—La crépitation dentaire; nouveau signe clinique de l'ostéo-périostite alvéolo-dentaire phlegmoneuse. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 10-14.—**Robinson** (Henry A.) [1840-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 414.—**Rohrbach** (J.) Triformalpastillen. Zahntech. Reform, Berl., 1902, xxi, 61.—**Roorda Smit** (J. A.) Amputatie van de tong met den Ketting-écraseur. Nederl. Tijdschr. v. Geneesk., Amst., 1902, 2. R., xxviii, d. 1, 887-889.—**Root** (A. G.) A case of sarcoma of the tonsil. N. York M. J., 1902, lxxv, 634-636.—**Rose** (A. G.) Prosthetic dentistry. Dental Reg., Cin-cin., 1902, lvi, 196-203.—**Rose** (F. H.) Notes on ethyl chloride as a general anaesthetic. Bristol M.-Chir. J., 1902, xx, 53-56.—**Roux**. Diverticule de l'extrémité inférieure du pharynx probablement congénital simulant un rétrécissement de l'oesophage. Bull. et mém. Soc. de chir. de Par., 1902, n. s., xxviii, 314-316.—**Sachse**. Ein Fall von doppelseitigem Unterkieferbruch. Deutsche Monatschr. f. Zahnh., Leipzig., 1902, xx, 107.—**Salamon**. Lithiase salivaire. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 18-21.—**Schamberg** (M. I.) Nasopharyngeal adenoids and their relation to oral deformity. Dental Brief, Phila., 1902, vii, 181-188. [Discussion], 201-205.—**Scholl** (C. R.) Record your dental operations. *Ibid.*: 189-199.—**Schreyer**. Ueber das Vorkommen der Maul- und Klauenseuche bei Kindern. Verhandl. d. Ver. d. Aerzte zu Halle a S., München, 1900-1901, 32-34.—**Sebileau** (P.) Sobre las diferentes formas de la septicemia bucal. Correo internac. odont., Madrid, 1901, vi, 2627-2643.—**Semans** (H. M.) A practical man from necessity. Dental Summary, Toledo, 1902, xxii, 183-185.—**Senn** (A.) Einiges über die Behandlung der Pulpakrankheiten. Schweiz. Vrtl-jshr. f. Zahnh., Zürich & Genève, 1902,

- xii, 14-26.—**Sfrei** (P.) Der Kopf des Menschen in anatomischer, histologischer u. physiologischer Hinsicht, mit besonderer Berücksichtigung des Mundes und der Zähne. Zahnkunst, Bresl., 1901, v, Nos. 48; 49; 50; 51; 52; 1902, vi, Nos. 1; 2; 3; 4.—**Shakh-Nazaroff** (I.) [History of dental schools in Russia.] Zubovrach. vestnik, St. Petersburg, 1901, xvii, 656-665.—**Shppard** (G.) Fractures des mâchoires et leur traitement. Progrès dent., Par., 1902, xxix, 79-92.—**Siffre** (A.) Influence de l'extraction de la dent de six ans sur l'éruption de la dent de sagesse. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 14-18.—**Simpson** (R. L.) An ideal bicuspid crown. Dental Cosmos, Phila., 1902, xlv, 328.—**Smirnow** (W. J.) Aktinomykose der Zunge beim Menschen. Med. Woche, Berl., 1902, 133-136.—**Smreker** (E.) Ersatz einer Schneidekante durch Porzellan bei lebender Pulpa. Wien. zahnärztl. Monatschr., 1902, iv, 49-52.—**Spence** (S. J.) A horoscope of dentistry. Dental Cosmos, Phila., 1902, xlv, 332-334.—**Stalder** (J. W.) Suppurative inflammation of the antrum of Highmore. Pacific Dent. Gaz., San Fran., 1902, x, 232-236.—**Stehr**. Tuberkulose und Zahnheilkunde. Med. Rundschau, Berl., 1902, Nos. 130; 131.—*Also*: Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 504; 505; 506.—**Stellung** (Die) der Zahntechnik. *Ibid*: Nos. 497; 500.—Taylor (P. R.) Adenoids of the pharynx. Am. Pract. & News, Louisville, 1902, xxxiii, 211.—**Thioly**. Xerostomie. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 1-10.—**Thorpe** (B. L.) Josiah Flagg—soldier, sailor and first native American dentist. Dental Rev., Chicago, 1902, xvi, 323-328.—**Touvet-Fanton** (E.) Sur la pyorrhée alvéolo-dentaire. Odontologie, Par., 1902, 2. s., xiv, 205-212.—**Trzebicky** (R.) Zur Ex- traction verschluckter Fremdkörper aus Pharynx und Oesophagus. Wien. med. Wchnschr., 1902, li, 649-653.—**Van Antwerp** (H.) Popular dental education. Dental Digest, Chicago, 1902, viii, 281-287.—**Varney** (Royal William) [1839-1872.] Perry (S. G.) Biographical sketch. Internat. Dent. J., Phila., 1902, xxiii, 284-286, port.—**Veis** (J.) Ueber die Heilbarkeit der Rachentuberculose. Arch. f. Laryngol. u. Rhinol., Berl., 1901-2, xii, 363-369.—**Villar** (F.) Des procédés opératoires pour l'extirpation du ganglion de Gasser. Assoc. franç. de chir. Proc.-verb. [etc.], Par., 1901, xiv, 353-369.—**Warren** (E.) On the teeth of Petromyzon and myxine. Quart. J. Micr., Lond., 1901-2, xlv, 631-636, 1 pl.—**Watkins** (R. L.) Some old and new points on examination of the blood. Items Interest, N. Y., 1902, xxiv, 263-275. [Discussion], 293-298.—**Wedelstaedt** (E. K.) A brief consideration of seven conditions that bring about opportunities for the failure of dental operations. Dental Rev., Chicago, 1902, xvi, 272-280.—**Weidner** (C.) Rheumatoid arthritis affecting the temporo-maxillary articulations. Am. Pract. & News, Louisville, 1902, xxxiii, 251-253.—**Witzel** (A.) Ueber Amalgamkronen. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 500; 501.—**Witzel** (J.) Ueber die Verwendung des Paraffins in der Zahnheilkunde. *Ibid*: No. 496; 497.—**Worms** (F.) L'histoire de l'art dentaire. Rev. trimest. suisse d'odont., Zürich & Genève, 1902, xii, 36-74.—**Wright** (C. M.) A plea for a sub-specialty in dentistry. Internat. Dent. J., Phila., 1902, xxiii, 235-238.—**Wróblewski** (W.) Ueber Anästhesirung der Schleimhäute mit 25 proc. alkoholischer Cocainlösung bei Operationen in der Nase, im Pharynx und Larynx. Arch. f. Laryngol. u. Rhinol., Berl., 1901-2, xii, 464-466.

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING APRIL, 1902.

- April 1.*—No. 696,545, to ARTHUR W. BROWNE. Dental engine wall-bracket.  
 " "—No. 696,652, to ALVIN F. MERRIMAN. Dental obtunder.  
 " "—No. 696,772, to GEO. W. TEUFEL. Crown-slitting tool.  
 " "—No. 696,713, to JESSE J. BROWN. Dental lathe.  
 " 8.—No. 697,326, to GORDON H. CLAUDE. Dental appliance.  
 " 22.—No. 698,280, to ANDREW J. HINIKER. Matrix-band retainer.  
 " "—No. 697,983, to SEABIRD H. B. COCHRANE. Artificial denture.  
 " 29.—No. 698,964, to MATHEW M. KERR. Dental articulator.  
 " "—No. 698,997, to JESSE W. MCCONNELL. Dental instrument.  
 " "—No. 699,006, to CHARLES A. PALMER. Casting-flask.  
 " "—No. 699,018, to ANDERS SANVIG. Apparatus for forming plates.







Sincerely yours  
J. O. E. Rice

# THE DENTAL COSMOS.

---

VOL. XLIV.

PHILADELPHIA, JULY, 1902.

No. 7.

---

## ORIGINAL COMMUNICATIONS.

### FURTHER REMARKS ON "LEPTOTHRIX RACEMOSA" ACCORDING TO MR. KENNETH W. GOADBY, OF LONDON.

BY F. VICENTINI, M.D., CHIETI, ITALY.

IN the sixth chapter of Smale and Colyer's treatise on the "Diseases and Injuries of the Teeth" (second edition, London, 1901, pp. 189-238), Mr. Goadby, dealing with the "Bacteriology of the Mouth," refers again, though as briefly as possible in a short article, to the questions already discussed in the March, April, and August issues of the DENTAL COSMOS for 1900, upon the *Leptothrix racemosa* and his *Cladothrix buccalis*.

In my first answer to Mr. Goadby (DENTAL COSMOS, *loc. cit.*, p. 719) I expressed the hope that in a further work (announced at the end of his first paper) he would endeavor to clear up the question of the peduncles and other appurtenances of the racemosa. Now, while thanking the author for again calling attention to my work and for his further agreement with some other statements of mine, as well as for his kind private communications, I must return to the subject, though I am somewhat in doubt whether, in preparing the chapter alluded to, the author was acquainted with my last article (DENTAL COSMOS, 1901, pp. 857-865), arising from Mr. Mummery's communication upon the same subject to the Third International Dental Congress.

Mr. Goadby begins the paragraph devoted to the new organism as follows: "*Leptothrix racemosa* of Vicentini was at first credited by its discoverer as the origin of all bacteria found in the sputum and saliva, morphological form alone being relied upon. Subsequently his view has been modified, but he still considers that many of the morphological forms met with in the mouth are phase forms of this peculiar organism" (Smale and Colyer, p. 209).

Now, to be exact, in the quoted article I explained my views more particularly, but without modifying them in any way. Thus, I

referred to racemosa all those scattered bacterial elements which may be seen daily growing in the mouth *upon* or *within* the stems of the new organism. Only, for some so-called pathogenic types of bacteria I left the question open, on condition that our opponents shall be charged with the burden either of a negative proof that the said bacteria are not appurtenances of the racemosa, or of an exhaustive demonstration of some other parent organism from which they might eventually proceed. Which, in particular, should be the bacterial elements belonging in my opinion to racemosa we shall see later.

With reference to the peduncle, Mr. Goadby makes the following remark: "Williams gives a number of photographs of this organism, some of which show the cocci-like bodies particularly well, but it is by no means certain that these basidia are not artifact. If the 'spores' are attached with these basidia or short stalk-like processes of the central thread, one would expect to observe the basidia on free spores, or on parts of the thread, which so far has not been accomplished" (Smale and Colyer, p. 211).

But what wonder that such slender and pale threads, scarcely visible even in unbroken fructifications, may have been overlooked upon small fragments of stems. On the other hand, it seems that the spores may often fall from the central stem together with their peduncles, which seem to be more firmly attached to the spores themselves than to the stem,—according to the fact already pointed out by Dr. Williams, that "Sometimes a few isolated spores may be seen standing on their fine peduncles or sterigmata at some little distance below the main head" (DENTAL COSMOS, 1899, p. 344). This notwithstanding, some remains of peduncles upon a fragment of stalk were already noticed and drawn by me, as I pointed out in my work and as I have subsequently related in answering the first paper of Mr. Goadby. "Figs. 23 and 25 of my work," I said, "give, I think, the most decisive evidences of this fact, chiefly in the Italian edition, where the plates were drawn more accurately. In Fig. 23, *d*, a fragment of a stalk stained with iodine solution shows its peduncles without spores, excepting two spores still adhering" (DENTAL COSMOS, 1900, p. 719). My Fig. 23 was somewhat diagrammatically reproduced in Fig. 25, *d*, of Dr. Williams (see his communication quoted, DENTAL COSMOS, 1899, p. 338). The attenuated diameter of this segment of stalk probably depended upon a flowing-out of its sap or germinal matter owing to rupture.

Hence, if other observers will verify the same fact, it needs on their part, not only a more extended series of searches, but an avoidance of aniline stains; because, so far as I am aware, these remains of peduncles upon some fragment of a stalk can only be perceived by means of a mixture (upon the specimen) of one drop of pure lactic acid, followed by one or two drops of a watery solution of a five per cent. iodurated iodide of potash, as stated at pp. 70 and 169 of my work, and as I repeated also in the quoted answer to Mr. Mummery's communication (DENTAL COSMOS, 1901, p. 864). Now, it seems that none of my critics has availed himself of this method! On the other hand, they appear to have relied almost



exclusively upon the apochromatic object-glasses, while I have already pointed out the insufficiency of these lenses for all specimens of the peduncles in question stained with iodine (see later).

Following the subject of the peduncles, I am pleased that now the author comes to express himself in such explicit terms upon such an important question, as I asked in my first answer. According to him, indeed, the spore-like bodies would be not transversely implanted, one by one, by true peduncles, on the stalk, but longitudinally attached, one to another, in chains; each chain lying along the stalk, and the various chains forming a kind of pencil around the stalk itself. The appearance of transverse peduncles would, in his opinion, be artifact, *i.e.* due to as many granules of gentian violet deposited here and there between each spore-body and the central stem, it being not difficult, he adds, "to produce the appearance of sterigmata by using a stain like gentian violet, which is notorious for its quick deposit" (*loc. cit.* p. 213).

But, in the first place, I cannot understand by what means of junction each longitudinal chain of spore-like bodies could be implanted upon the stalk, either at the basis or at the top of the fruitful head, and how these long chains of round bodies could remain still so connected together and with the stalk, as I noted at p. 128 of the work.

In the second place, the peduncles, though stained with gentian violet, appear so pale, and are so regular in shape and arrangement, that they could hardly be ascribed to an accidental precipitation of coloring matter.

In the third place, we may remember the case mentioned at p. 217, and shown in Fig. 32 of my work, in which, by clarifying the second time, by means of a solution of potash, the granules of gentian violet deposited through the specimen, the peduncles, before invisible, were made quite distinct. Let me reproduce here the whole passage from the text:

"This figure has the characteristic, which I had noticed in other sputa and in the patina dentaria, of being lightly pyriform in appearance. The *glia* (glair) shows a vividly colored contour; the central stem is also club-shaped, as in Fig. 27; but the club, instead of being cylindrical in shape and of a uniform thickness, exhibits a somewhat conical shape, with its base turned upward; thence its general pyriform appearance. I noticed that such conical club-shaped *ears* are, generally, longer than those with cylindrical clubs.

"As the colorization had been too strong, and the preparation was full of numberless stained granulations, I clarified it with a drop of liquor potassæ (1:10) through capillarity, always keeping the *ear* in the visual field. As soon as the solution of potash reached that field, the colored granules at once disappeared, and, in spite of the small enlargement, I was agreeably surprised to see, at the same time, the *glia* discolored, and the thick and very distinct peduncles, from the two sides of the central stem, make their appearance, as in Fig. 32, *b*. In the first place, the dissolving action of potash only acted on the *glia*, the peduncles and the sporules still keeping the stain; but afterward they also became pale, although

they were discernible, especially by lamplight. The central stem kept the stain longer, only fading within four hours" (pp. 217, 218 of the work).

In the fourth place, it is to be borne in mind that gentian violet is not the only stain by which the peduncles in question may be distinctly perceived; nay, the treatment which in my hands proved the most suitable was precisely the mixture of lactic acid and iodurated iodid of potash above mentioned. I spoke of this method in answering Mr. Mummery's last communication, in the following terms: "I have already cleared up this point in the previous articles so that I am relieved from recalling here the same statements as to the difference between the direct observations and the photographic images, as well as between the apochromatic object-glasses and the one-twenty-fifth-inch achromatic immersion lens I made use of for this special research. Only I will observe that the iodine solution employed by me was not 'a one per cent. lactic acid solution, followed by tincture of iodine,' as the author states, but a drop of pure lactic acid, followed by one or two drops of a watery solution of a five per cent. iodurated iodid of potash. I am quite sure that, by this method of staining and by the above achromatic lens with a No. 1 Huyghenian eyepiece, anybody will be able to distinctly perceive the peduncles in question, provided the best illumination method be adopted and the search be chiefly directed upon the isolated fruitful heads floating in the interspaces between the clods or along the edges of the preparation, where, by their lightness, they are impelled. This for the reason that these isolated heads show their peduncles more nicely" (DENTAL COSMOS, 1901, pp. 863, 864).

To these remarks I here only add that no doubt as to such a precipitation of coloring matter could arise here, and that when our critics shall be pleased to treat these specimens in the same way, and to put aside the apochromatic object-glasses for a one-twenty-fifth-inch homogeneous immersion lens, they will soon become convinced of the strikingly racemose structure which may be made out by this method.

Coming now to the question of the classification of the new organism, the reader will remember that Mr. Goadby in his first article claimed to refer it to the genus *Crenothrix*, and will also remember the objections advanced against this statement by Mr. Mummery and by myself, though independently the one from the other (DENTAL COSMOS, 1900, p. 719, and 1901, p. 865). I am gratified to find that Mr. Goadby has now implicitly withdrawn this previous opinion, as follows: "The *Leptothrix racemosa* corresponds sufficiently to this general description to allow the provisional acceptance of the term, but if the sterigmata are really present and not artifact, the organism belongs to a much higher species and must be referred to the *Ascomycetes*. If such should prove to be the case by subsequent research it is not improbable that it will be found that the so-called leptothrix observed in the mouth is a phase form in the life-history of some organism living outside the body in another form" (Smale and Colyer, p. 214).

"It may be as well," concludes the author, "to remind the reader that the suggestion that *L. racemosa* is the parent form of all the organisms to be found in the saliva is not in accord with fact. Some of the thread forms described by Miller may be, however, portions of the threads" (*ibid.*). But, though with the above reservations, he should have added that the new organism (whether it may be regarded as the source of all bacterial forms of the mouth or only of a few) cannot be merely considered as a fortuitous inhabitant of this cavity; but it deserves undoubtedly the greatest attention as being the most complex, the most prominent and indestructible organism (the organism *par excellence*) of the human mouth, and one which has not yet been found in its full growth elsewhere, neither in the external world nor upon some other part of the body.

From our *racemosa* the author comes to deal with *Leptothrix buccalis maxima* and *Leptothrix innominata*, as well as with *Bacillus buccalis maximus* of Miller. I have somewhat largely discussed these thread forms in my work, in order to show that they can be reduced to the same species as our *racemosa*, namely to *lower stumps* and *truncated stalks* of this organism, according to the "Synopsis" given at p. 99 of the same work. The thickness as well as the woody state of a great number of these truncated stalks, with deep violet reaction under iodine, would depend, as I suggested, upon a very natural cause. The rupture, indeed, by removing the apex, *i. e.* the fruitful point of the respective filament, renders the remaining portion of the same unable to attain its truly reproductive stage. Then the truncated stalk retrogrades to the lower function of a merely vegetative organ, by its increasing in thickness and the inward formation of inclosed bacteria, at the expense of the pre-existing reserve-gemmules (drawn in my Figs. 2,  $n^1$ , 16,  $a^1$  and 24), through some retrocession of the ascending sap, as happens, for instance, in the pruning of trees.

It is precisely this disintegration of these old stalks that would constitute the *dissociated state* of some bacteria, as for instance *Leptothrix*, *Cladotrix*, etc., of which I gave a short account according to Billet as follows: "The *dissociated state* is characterized by setting free the constituent elements of the filamentous state. These elements continue to disintegrate, but instead of uniting into series or chains they separate and live isolated. At times, however, they remain united in couples or in small chains, but, dissimilar from the preceding elements, they are essentially motile. Consequently in the dissevered state all those forms will be found which have been already described in the filamentous state. Physiologically, the dissevered state has a very important office to fulfil, which is chiefly a phase of dissemination. Thanks to the mobility and the active segmentation of its elements, it can in a short time spread over a very extensive culture medium. Thus it happens that under these very forms of isolated, dissevered, or motile elements the Bacteriaceæ are more frequently met with, and are better known" (p. 164 of my work).

I showed besides that this wandering life-stage of the said bacteria appears to be destined, by means of their fissiparous multipli-



cation, to spread the species *extensively*, through fluid media, when the same bacterial elements cannot do so *intensively*, *i.e.* by true fructifications upon a firm and appropriate soil, like (for the mouth bacteria) the surface of the teeth. And it happens for this purpose that the said bacteria and rods may emit cilia (spoken of by Mr. Goadby and other authors), without constituting, however, as many independent beings, in the same way as vibratile epithelia, for instance, of the air-passages (carrying by their ciliary motion both the mucus and the foreign particles of atmospheric dust), do not constitute in their turn as many independent beings.

Thus, besides the spore bodies growing *upon* the racemosa stems, to be regarded as the source of the obvious buccal forms of cocci, we meet with a great number of dumb-bell and of elliptical bacteria growing often in a longitudinal series, but sometimes transversely, *within* the sheaths of the said truncated stalks, as in Figs. 2, *n*, and 5, *a*, *d* of my work. All these forms are evidently nothing but so many scattered particles of our new organism.

Likewise, another great number of other scattered particles, as spindle-like, comma, snake-like, and slender bacilli of the mouth, are to be referred to the male organs described as well by me, either in their younger condition, like receptacles (spermogonia or antheridia), as in Figs. 2, *n* (below) and 28, or in their full growth, like the horsehairs of a cylindrical brush (productions by points), as in Fig. 14 of the same work.

It would be necessary to deny intuitive evidence in rejecting at once the common descent of all these scattered forms of mouth bacteria and bacilli from the same source, *i.e.* from our new organism, on which they are seen daily growing and living a stage of their life, as I have repeatedly emphasized in my work and in the above-quoted paper: an organism, I repeat, which thrives so luxuriantly, as in Fig. 17 of Dr. Williams (DENTAL COSMOS, 1899, p. 331), by more than a trillion of fruitful heads, as a true excluding vegetation, upon our teeth.

Only, perhaps, the so-called pneumococci, the Koch's bacilli, and some other so-called pathogenic forms might still remain undetermined, as to the question whether they could be referred to the same source as all the others, or are related instead to some other parent organism now unknown (see my answer to Mr. Mummery, DENTAL COSMOS, 1901, p. 863). It would be with respect to these peculiar forms alone that in my opinion their source might still remain doubtful, though the said pneumococci do not differ morphologically from the common diplococci of the mouth, and the tubercle bacilli do not differ in their turn from series of sporules fallen from the fruitful heads of racemosa.

Now, all these statements so briefly summarized could hardly, I think, be contradicted, at least without a careful and unprejudiced examination, and I am glad to see that Mr. Goadby comes now to implicitly agree with some of them, where he says (Smale and Colyer, p. 214) that "Some of the thread forms described by Miller may be portions of the threads of racemosa," and that "It is extremely likely the *Leptothrix racemosa* was figured as one or other

of these thread-forming bacteria (*Leptothrix buccalis maxima* and *Leptothrix innominata* of Miller)."

Toward the end of the chapter, the author recalls his previous statements as to his so-called *Cladothrix buccalis*, to which I have already referred in my article of 1900, pp. 721-723.

That this growth described in 1900 by Mr. Goadby was nothing but the same form already described and drawn by me since 1890 under the name of *swellings at the apex* or *small heads of young filaments* (p. 116 and Fig. 9, *b, c* of my work), is a fact that I am pleased to see is now recognized by the author himself (Smale and Colyer, p. 227), where he says that "Vicentini in his researches, and also Williams, came across this curious organism, but passed it over with a few remarks," and that "Vicentini did not isolate the organism he observed, but there is no doubt that it is the same."

The reason, however, why I dealt so briefly with this form of threads was precisely that in my opinion it was nothing but the same *racemosa* growth *in its younger condition*,—a statement that I am in position to maintain even at present; because I had already described a strictly similar growth upon some flakes or spires of mucus discharged by the male urethra, and (having kept these flakes in a small tube) I had seen a number of true "fruitful heads," *i.e.* of *ears* or grape-bunches of *racemosa*, arising from the same (see p. 134 of my work).

On account of an actual ramification process like that suggested by the author in the said threads, it might be objected that, according to my own observation, the above swellings or capituli, as in my Fig. 9, *c*, appeared constantly *at the top* of the respective filaments, intermingled, like so many barren hyphæ or paraphyses, or so many unripe stems, between a number of other matured filaments undoubtedly belonging to *racemosa*, *i.e.* bearing at the top their own fruitful heads or spicæ,—a fact which showed that the swelling of the said capituli took place only at the apex of the respective threads. On the contrary, the dichotomous or trichotomous branching forms of the same younger threads (referred by Mr. Goadby to *Cladothrix*) appeared only at the bottom, by other smaller and round swellings, which I was led to compare to the *haustoria* of many fungi, as in the same Fig. 9, *a, b*. Hence the said branching forms evidently appeared to be like a kind of radical system in the implanting-place of the respective filaments (p. 116 of the work), rather than a ramification sprout arising either in a transverse direction or in an upward one, *i.e.* toward the capituli.

A confirmation of this fact and of its true meaning may be seen in Figs. 8 and 37 of the communication of Dr. Williams (*DENTAL COSMOS*, 1899, pp. 323 and 348). Fig. 37 of Williams shows, indeed, three branches in the implanting-place of a single filament, while four are shown in Fig. 8. But, what is even more important, in the same Fig. 37, the filament bears at the opposite extremity, *viz.* at the top, *its own fruitful head* strictly similar to all the typical fructifications of *racemosa*.

Such a specimen deserves, I think, the greatest attention, as a

standard-like exemplar of our cryptogamic planticle *in its whole*,—*i.e.* beginning from its implantation roots and ending at the top by its fruitful head. Here all the characteristics of a true fructification are so very evident that it could not be mistaken either for any phenomenon of commensalism or symbiosis, nor for a fortuitous accumulation of adventitious cocci around a filament. On the other hand, this specimen gives us a further proof of the implantation of the above branching forms only at the bottom of the respective threads (assumed by Mr. Goadby as *Cladothrix*) and of the analogy between these younger threads and our *racemosa*. We have here, in fact, in a single organism, the branching roots of the one joined with the typical fructification of the other.

For those who wish to verify these implantation roots in the said younger filaments, I dare remark that, in order to avoid their breaking up, the unstained specimens, as in my Fig. 9, *a, b*, prove more suitable than the stained ones. At any rate, until on this showing the facts alleged by me and indirectly confirmed by Dr. Williams shall be either explained in a more satisfying manner or overthrown by other facts, the so-called *Cladothrix buccalis* of Mr. Goadby cannot, in my opinion, be assumed as a new and independent species.

But, whatever may be the results of this particular inquiry, or the further destiny of bacteriological studies in general, I venture to repeat my call for more attention to the morphology of the genuine growths of the mouth than upon the scattered bacterial elements, on that simple line which I have repeatedly suggested, and which I make bold to say, has been too much neglected up to the present time.

Our knowledge concerning the life-history of all the said microbes must, otherwise, remain uncertain and defective. Thus Mr. Goadby speaks of the "thread-forming habit as a common one among bacteria, as for instance, *B. anthracis*, *B. subtilis*, *Spirillum cholerae*, and many others, the streptococcus even at times forming a chain of rod-shaped bodies of the streptobacillus type" (Smale and Colyer, p. 214), without any suspicion of the probable meaning of these facts, *i.e.* of some incipient morphological evolution of the said bacteria toward the higher fungi, like that with which we have met in our *racemosa*. I quoted elsewhere examples of some analogous filamentous sprouts arising from pneumococci, and of some ramification process noticed as well upon some cultures of tubercular bacilli (see DENTAL COSMOS, 1901, p. 863). In a further passage, the same Mr. Goadby relates, according to Hueppe, that "the Ray-fungus, *Actinomyces*, is nearly related to *Cladothriceae*, and what is even more interesting, the suggestion has latterly gained ground that both the diphtheria bacillus and the tubercle bacillus are a stage in the life-story of one of these species of *Cladothrix* or *Streptothrix*" (Smale and Colyer, p. 225).

Now, "Here," said Dr. Williams, "are the facts which must be reckoned with in all future considerations of the bacteria of the human mouth and body" (DENTAL COSMOS, 1899, pp. 345, 346), and here, we may conclude, are the reasons by which no satisfying



classification of bacterial species can be arrived at on the ground of the usual culture methods alone, and without an adequate account of the whole life-history of these micro-organisms from their rudimentary condition up to their full growth.

---

## CAVITY MANAGEMENT IN CONNECTION WITH THE CONTOUR MATRIX.

BY WILLIAM CRENSHAW, D.D.S.,

Professor of Operative Dentistry, Atlanta Dental College.

SINCE the establishment of the fact that non-cohesive gold properly condensed is the better preparation of that metal for the preservation of enamel and cementum margins, there has been a pressing need for a matrix which possesses the qualities of adaptation and fixedness to the teeth, and at the same time provides for contouring so that they are finished in full form and left in proper position, preserving the interproximal space. A further desideratum is that the matrix shall be resistant enough to stand the pressure of condensing gold against it and susceptible at the same time of being formed into whatever shape is needed, also that it shall be so constructed that it can be removed from between the teeth without destroying their restored form. The writer begs to say these points are assured in the device offered and with the cavity management suggested.

The subject of *cavity management* comes up in connection with the matrix as a matter of first importance.

The forms of cavity preparation ordinarily employed between molars and bicuspid in extensive decay answer in some degree in matrix work, but so far as the writer has observed there has been no special effort at a system for the treatment of the difficult work encountered between these teeth when soft foil is to be used in connection with the matrix. The devices heretofore used are ill adapted for this work and have given unsatisfactory results because they have not successfully restored the original form even when they were in position, and because they could not be removed without marring the contour of the filling. There must be therefore a departure from former methods if we are to restore and maintain proper positions and successfully adapt soft gold at the cervical margins, and particularly if we are to raise a column of it, thoroughly condensed, to the depths of the cervico-occlusal wall.

In almost all large cervico-occlusal cavities, in pulpless as well as live teeth, we have occasion to use zinc phosphate. In the case of pulpless teeth, its use is indicated as the best material for filling the pulp-chambers and bringing up the floor surface of the cavity to the height desired, and for aiding to shape the cervico-occlusal aspect of the cavity into a simple and easy form for non-cohesive gold. In the case of live teeth we need it for the prevention of thermal shock to the pulp, to displace gold, and to aid in shaping the cervico-occlusal aspect of the cavity into such form as shall be easily filled with non-cohesive gold.

In Fig. 1 is represented the cavity preparation with which, in connection with the matrix and combination gold (soft and cohesive), the writer has been able to bring gold work to a degree of perfection he had not heretofore approximated.

At the cervical margin of Fig. 1 it will be observed that the floor of this aspect of the cavity, A, and the external wall of the tooth, B, form practically a right angle,—which is the angle, all things considered, with which to secure the best margins and best results.

Beginning well up on the side wall at c, passing down and along the base of the cement step and up the opposite side wall, is a groove c c, made with a No. 3 or 4 round bur, or Perry-Darby excavator Nos. 11 and 12, designed as an anchorage for the base of the cervico-occlusal column. In this groove and upon the floor surface, marked A, is condensed the gold. The groove extending up the side wall is not a necessity, but may be incorporated in the cavity formation when the walls are strong. But that portion of it along the floor of the cavity should always be employed.

In the instances where the lateral walls are weak and the groove cannot be formed, the occlusal anchorage shown at D, Fig. 1, should be employed. In the formation of the side-wall edges, E E, Fig. 1, care must be taken to leave them strong enough to prevent fracturing under the pressure of the matrix bands. These walls should be beveled on the lines E E, Fig. 1, terminating in an obtuse angle with the outside wall, if possible to be obtained. Less than a right angle should not be depended on, if it can be avoided, as there is danger of fracture.

In Fig. 2 will be seen the cavity preparation of Fig. 1, embraced by the matrix. In this illustration the teeth have been forced apart by the action of the screw, the bands adapted close around the cervical margin, the top edges brought together and a wedge introduced between the bands at the cervical edges, though the wedge is rarely necessary. In this figure we should have a view of the top of the cervico-occlusal aspect of the cavity which represents its dimensions to the cervical margin. This view should show the bucco-lingual direction to be four to five times as great as the mesio-distal; and its depth from the top of the cement step to the floor about equal to the bucco-lingual. In parts of an inch this aspect of the cavity will measure ordinarily in the bucco-lingual direction from one-fourth to five-sixteenths; in the mesio-distal one-sixteenth, and in the cervico-occlusal from three-sixteenths to five-sixteenths. Fig. 1 gives a better view of the measurements referred to. The object in view is to bring this feature of the cavity into simple easy form for non-cohesive gold.

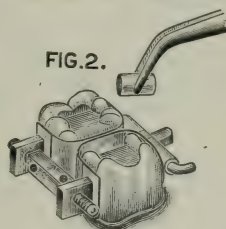
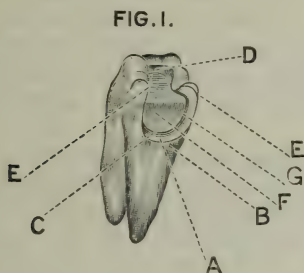
The matrix is duplex in form; the bands are of semi-soft steel of suitable width and gauge, and are oppositely disposed around the approximal surfaces of the teeth, giving the contour outline. The bands attached to the nuts with a screw may be tightened and loosened about the teeth by turning the tension screw-bar.

On the opposite side of the matrix will be seen short tubes attached to the ends of the bands, through which passes a pin. The inner ends of the tubes under the pressure of the tension bar are

forced together and form the fulcrum for tightening the bands and forcing the teeth apart.

The matrix as seen in Fig. 2 is adapted to pass over the largest molars, but by opening the tubes and inserting a middle tube-piece it can be taken up and made to fit the smallest ones. The adjustment from large to small teeth may also be made by running the nuts out on the tension bar, which will close the space between the tubes and tighten the bands against the teeth, and, in proportion to the power applied, will force the teeth apart.

The pin may be withdrawn after inserting the filling, and the band opposite the one holding the filling turned out, thus relieving the pressure, when the other band can be removed, as shown in Fig. 4. These bands turn out on the screws of the tension bar as a pivot. In making plastic fillings, particularly of amalgam, this feature enables us to remove the matrix and yet preserve the contour, without lifting or unseating the filling.



The bands are detachable from the nuts, and different widths may be used on one tension bar, though the complete device in each width of band is more satisfactory.

To apply the matrix between molars and bicuspid in the instances where the approximal surfaces have been removed and the interproximal space closed, it is best to separate with a corundum disk of twice the thickness of the bands. This is more satisfactory than the practice of gaining space with cotton, linen, rubber, etc., though the latter means must sometimes be employed. After this is done and the matrix is in place, further separation with the tension bar can and should be effected to a little more than the thickness of the two bands, which when removed permit the teeth to come back together. The matrix has the power and is made strong enough to effect this separation.

In addition to the contouring effect of the matrix, another equally valuable feature is secured in being able to place non-cohesive gold exactly and definitely at the cervical margin, which may be built as far up the wall as is deemed necessary. With the matrix in position we have a mold, so to speak, to fill, which not only gives the contour to the column thus built, but limits the amount of the material to that which is necessary,—no more and no



less. The form of the matrix insures the encircling of half of each tooth embraced and makes possible the filling of many teeth that are sacrificed to the gold crown.

Condensing soft gold in a cavity formed as is shown in the cervico-occlusal aspect of Fig. 2 (which is Fig. 1 embraced by the matrix) is easy of accomplishment, if a cylinder of soft gold be slightly compressed into a cushion, introduced edgewise, and condensed with square-faced shallow serrated pluggers of suitable size.

The long axis of the cylinder should lie bucco-lingually in the cavity, and as a result of proper condensing should secure a solid, stable wall. The spreading of the gold under this pressure is in the mesio-distal direction, and the pressure against the rigid matrix band on the one side and the cement wall, F, Fig. 1, on the other is in this direction. Under these conditions and with such control the cushions are settled immovably into the groove C, and upon the margin A, shown in Fig. 1.

Another feature to be observed in this operation is that the resistance necessary for condensing the gold is removed almost entirely from the side walls, which in extensive decay are rarely strong enough to bear the strain. This resistance, as already observed, is borne by the matrix band and the tooth or cement wall opposite.

Though there are various forms of gold which may be employed in this work, Pack's cylinders, Nos. 2, 3, and 4, of soft foil are those with which the writer has accomplished best results at the margin and in building the cervico-occlusal wall. In the absence of the cylinders, No. 4 soft foil rope, made into cushions, may be used with admirable results. Both the cylinders and the cushions made from the foil should be slightly compressed into a pillow-like cushion between the fingers and introduced edgewise, as shown in Fig. 2.

In condensing the cushion it should be held down at one end, while the plugger (which should possess rectangular faces) packs down by hand pressure at the other. Then change about and pack firmly, directing the plugger so that it shall bear squarely over the margin beneath, and shall carry the gold unerringly into the angle made by the floor of the cavity and wall of the matrix and into the anchorage groove.

After introducing the first cushion, hand-pack and insert two or three others and mallet over the gold thoroughly. It is deemed best, up to and including the malleting, to hold down on the gold; but not so after this, as the mass will be settled immovably on its foundation. Proceed with other cushions, giving special attention to the angles at the lateral walls, and condense thoroughly. Bring up the wall to the level of the step which leads into the doll-head anchorage, D.

At this juncture take a suitable plugger and mallet a groove next the matrix band marked G, Fig. 3. Now begin in one of the angles at the side with cohesive gold and build into the groove above referred to, crossing over to the opposite side. In doing this we

cause the cohesive gold to catch over and hug in the top of the soft gold column. The base of the wall is held secure in the groove for this purpose at c, Fig. 1. In this method we gain the point of placing the soft gold where it accomplishes the best results, and also the cohesive gold where it is best employed.

The matrix and cavity management herein suggested enable us to fill extensive cavities with a minimum amount of gold, and bring up the cervico-occlusal wall more easily and quickly, and correspondingly more perfectly.

FIG. 3.

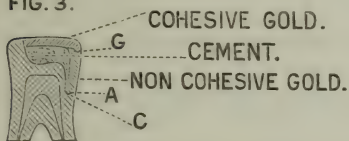
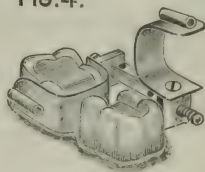


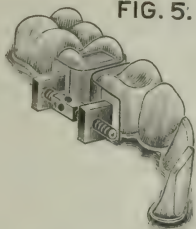
FIG. 4.



The contouring of the teeth and the maintaining of them in proper relations apply to the use of plastic materials as well as to that of gold. The cavity preparation for soft gold is ideal for the use of tin foil.

The finishing of the approximal wall of extensive gold fillings when the contour is to be preserved has always been a task. Coming as it does at the end of a tiresome operation, when the operator and patient are exhausted, it is a doubly dreaded undertaking.

FIG. 5.



The finishing of this wall in matrix fillings requires but a few minutes and is a pleasant task in comparison with that of cohesive work. The form of the wall is complete when the matrix is removed, and there remains only the use of the polishing strips to finish and complete the operation.

In Fig. 5 will be seen the matrix as adapted to bicuspid. It is necessary to have the tension bar of both bicuspid and molar pattern of such length as shall place the nuts centrally against the teeth. This gives steadiness and rigidity to the matrix in position. It will be found that the bicuspid matrix can be adjusted so as to apply between the second bicuspid and first molar, and that the molar pattern also can be applied between these teeth, but not to the best advantage.

In summing up the advantages of the foregoing we may enumerate the following points:

1. The restoration of the natural form of the teeth.
2. The maintenance of the proper position of the teeth.
3. The maintenance of the interproximal space.
4. The placing of soft gold or tin foil where it accomplishes best results, and the cohesive gold where it serves best.
5. The avoidance of the dangers and evils of the retaining pit.
6. The simplification of the most difficult aspect of compound cavities, namely, the cervico-occlusal.
7. The perfect adaptation of soft gold or tin foil at the cervical margin.
8. The perfect condensation of soft gold or tin foil in the cervico-occlusal wall.
9. The saving of time and material in building and finishing the cervico-occlusal wall.
10. The contouring of tin and plastic materials as well as of gold.
11. The simplification of the difficult work encountered between molars and bicuspid and the rendering of them into beautiful contour restoration.

---

## ASEPSIS.

BY R. C. YOUNG, D.D.S., ANNISTON, ALA.

(Read before the National Dental Association, Southern Branch, February 18, 1902.)

**I**NFECTIVE inflammation is a bacterial invasion of living tissue, after an injury or at a time when nature is so impaired that the normal cell elements cannot resist their attack. Infection occurs through the skin, mucous membrane, or alimentary canal, respiratory and genito-urinary tracts, and by inoculation during injury and surgical operation.

Cleanliness is akin unto godliness, and it is the first principle of surgery. Let us differentiate between the terms "antisepsis" and "asepsis," for indeed there is a vast difference in their practical meaning. The lack of the latter will necessitate the former; the presence of the former demands the latter.

Lister, the great London surgeon, may well be called the archbishop of antiseptic surgery, for undeniably it was through his demonstrations that the gates were thrown open, inviting modern surgery to a field rich in alleviation of suffering humanity. But it is not here that we hear of the first aseptic operation. Far down the vista of history, made hoary by the touch of time, in the early dawn of creation, when the first sunbeam kissed awake sleeping life in one grand melody of praise to the great Architect, a deep sleep was upon the Prince of creation, and from his side was removed a rib, and lo! his queen,—fair, beautiful, self-sacrificing, noble woman! the greatest gift of God to man,—was created.



Nor was the Good Samaritan far behind the present-day treatment of wounds, when he found the poor unfortunate, cut and bleeding from the treatment of the thieves. He dressed his wounds with wine and oil. Did he know that the alcohol of the wine was detergent, that the acid (for no doubt it was a dry wine) was a germicide? The oil excluded the tropic air, no doubt laden with pathogenic germs.

Can we, as dentists, practice aseptic surgery? Yes and No. Here we have a field already occupied by countless germs. Often, those who demand our attention are suffering from abscess, a circumscribed cavity containing pus; here the pus germ has already possession, or (a very common picture) a mouth filled with roots and broken-down teeth festering in a bath of pus. Can aseptic surgery be practiced here? No, one must rely on antisepticism. But you say that asepticism is imperative in all surgical operations. Why do we not have pyemia, septicemia, or a host of evils, following the removal of such roots and teeth? May it not be that the patients are immune to germs which are cultivated upon themselves, or is it because this region has some special resistive power? There must be a charm, for the countless number of teeth extracted with a total disregard to cleanliness, not to mention sterility, is a fact that cannot be denied, and did you ever hear of a person dying from tooth-extraction? Perhaps not, but we do see patients who have suffered for weeks after such operations with ulcers, sloughing, osteitis, etc., which beyond a doubt could have been prevented.

It is not a very uncommon thing for a dentist to extract a tooth, lance an abscess, or perform some act of minor surgery, wipe or rinse off the instrument, dry it on a napkin or towel which has been used or exposed to the air of a room which has never been disinfected since it was built. Patient number two comes along; the same instrument is taken from the place where it is kept, not even washed this time; or a tooth is broken in an effort at extracting. After several futile efforts to remove the roots, a digital examination is made; the finger is poked into the hole, and the roots felt for. This finger has been in a dozen mouths, handled all sorts of things, possibly money,—and a dirtier thing, in the germ sense, is hard to find. It may have been washed with a little water and soap, which was made from the carcass of an animal dead with no telling what disease. Patient dismissed without even a suggestion that he use a mouth-wash. Yet he lives!

A bur is used, the blades of which are matted and clogged with the débris from another tooth. Its cutting capacity has been decreased not only because it is dull, but the interspaces between the blades are packed with tooth-dust, and have to be pressed hard against the tooth to make it bite in. It slips out of the cavity, and plunges into the gum. Do we have infection? No. Yet this instrument is undoubtedly septic.

An abscessed tooth is treated, or a putrescent pulp is removed with a Donaldson broach. A little later another tooth is to be

treated, perhaps a pulp to be removed under pressure anesthesia. The same broach is taken up, the pulp twisted out. Or it may be that an abscess with a fistular opening is to be made antiseptic. The broach used in the other case is manipulated, and perhaps the gum may be probed with this broach. Is it aseptic? Undoubtedly No. If there are such things as germs, they are here. A knife or smooth dressing-probe might be wiped clean, but not a nerve-broach,—no, never!

An injection of cocain or eucain is to be made. Here a syringe and needle are used, perhaps, which have been used no telling how many times or for how many things; not even has all the last fluid been gotten out of the barrel of the syringe. The needle is dipped into a bottle of some patent antiseptic which has no cocain in it, yet it is full of it. Possibly the bottle has been open for a month, and the same needle has been dipped into it over and over again, after having been first in one gum, then in another. Has it been made sterile? No. Some time ago I was speaking to a prominent dealer in dental supplies. He said that he had that day received an order from a dentist, who wanted a hypodermic syringe needle, "a good big one, which he could use for injecting cocain and for treating abscesses"! Isn't that damnable?

An examination is to be made. The patient is left in the operating chair with a polite, "Excuse me a moment, please." Perhaps the hands are given a cold-water rinse, the mouth-mirror taken from the bracket. If it has a little blood on it, it may be wiped on the hand-towel, or a napkin. Is the mirror clean?

A dentist, who is quite prominent in society work, once expressed to me surprise at my prodigal wastefulness, when I told him I did not use a rubber dam after having had it once on. He said he used it over and over; he washed it with soap and water. Can asepticism be claimed here? Perhaps not.

Well, after all, what does it matter? Nobody was ever poisoned, inoculated, or hurt by such things. If it looks clean, it's all right. What you don't know won't hurt you,—so says Billy Baxter. Ah, there's the rub! the finger that makes a vaginal examination often points to the cemetery, and likewise the septic dental instrument may be the signboard to the same silent city. We may not see the immediate effect locally. Who can dispute the statement that tuberculosis, syphilis, diphtheria, etc., can be and are conveyed from one subject to another by the use of the same cup or article placed in the mouth, such as a pen, pencil, money, etc. This is a fact, and it is indisputable. There is a case fresh in my mind, where the operator was himself inoculated from a syphilitic patient. The case occurred in this city, Atlanta, and is well remembered by a number of gentlemen now present.

Then, are we not in duty bound to protect our patients? Is it not a moral obligation we owe them, our profession, and ourselves? "There is more in heaven and earth, Horatio, than is dreamt of in thy philosophy." And though the casual observer may scoff at the idea, still disease and death often go with dirt we cannot see.

It does not cost much in time or outlay to bring about a reasonably safe aseptic condition of our operative surroundings.

First, let us take care of the hands. Absolute hand-disinfection, as shown by Welch, is impossible, even by the most severe methods of disinfection. We cannot rid the skin of the hands from every bacterium, chiefly because of the presence of the *Staphylococcus epidermidis albus*, which inhabits the deeper portions of the gland-crypts. After the best of antiseptic methods, bits of skin may be excised and this germ be found therein. I have a half-round tank, which holds three or four gallons of water, fastened to the wall, just over a stationary wash-bowl. In the bottom of this tank is a faucet and a stopcock. Every morning fresh water is put into the tank, and a few grains of potassium permanganate thrown in, just enough to color the water. To cleanse the hands, the cock is opened and the hands washed in running water (the basin not being used), with good soap and a nail-brush briskly used, for it is under and around the nails we find the most septic matter, and it is difficult to remove. Never go from one patient to another without a hand-washing, and often during an operation if it be a long one on the same patient. This repeated washing of the hands necessitates some lotion to keep the hands soft. Glycerin, rose-water, and a little carbolic acid is excellent. Never use perfumes or strongly scented soap.

Now for the instruments,—forceps, excavators, burs, knives, clamps, etc. A sterilizer can be made for a couple of dollars which will do just as efficient work as one that costs ten. Any tinner can manufacture one: A tin pan 6 x 12 inches, 4 in. deep, with a cover to fit close, a piece of perforated tin, with a handle on each end, which will fit nicely inside like a second bottom. Upon this the articles to be sterilized are to be placed; a solution of ordinary cooking soda, sodium bicarbonate, about two-thirds fills the pan, and it is placed over a Bunsen burner, or a coal-oil lamp used for the vulcanizer, to boil five or ten minutes; lift the false bottom out, and the heat of the instruments will dry them off in a few moments. The soda in the water prevents rusting; of course wooden-handled instruments cannot be boiled. Just before using a lancet or forceps, dip in alcohol and touch with a lighted match, letting the alcohol burn off; it will not injure the temper of the steel.

Before placing burs in the sterilizer, brush them off with a wet tooth-brush, or a brush of similar shape.

In treating a tooth which has two or more roots, never use the same broach in different roots without cleansing it, for it may be that all the roots are not septic,—abscesses are often confined to one root,—and if the instrument be used in first one and then the other it is more than possible to carry infection into the other roots. Of course we would not allow the saliva under any circumstances to enter the cavity.

For the sterilization of small instruments, such as probes, broaches, syringe needles, etc., a quick and efficient method is to



boil them in a test tube containing a bicarbonate solution. The hypodermic syringe, when not in use, should be filled with an antiseptic solution, and never used for any other than a submucous or subcutaneous injection. The needle should be kept in alcohol, or, better still, a five per cent. solution of lysol. The most delicate instrument can be kept in this for an indefinite time without injury. If one has a gold or iridio-platinum needle, it can be sterilized in a flame. If one does not think the mouth-mirror needs sterilizing, just let him rub off glass and handle with a moist cloth, and he will be convinced. Of course the mirror cannot be boiled; it must be kept in a glass of some antiseptic solution. Let your preparation so shine before your patients that they may see your good work, and they will appreciate it.

Now, I have attempted to advance no new ideas. It was not my intention to give you a deep scientific paper. Nor have I exaggerated the conditions which exist in many dental offices. Although we may never hope to obtain the ideal, let us try to have our environments so that inoculation of one patient from another may be made practically impossible.

---

## THE SHOCK OF DENTAL OPERATIONS.

BY C. A. VAN DUZEE, D.D.S., ST. PAUL, MINN.

(Read before the G. V. Black Dental Club, October 18, 1901.)

**T**HE subject which is presented to you in this paper represents an attempt to direct your attention to the conservation of vital force in the subjects who, through error on their part or from causes for which they are not responsible, are forced to place themselves in our hands for treatment.

The greater part of our operations refer to the tooth proper, and the shock to the nervous tissue or system is, as a rule, greater from this class than from the minor operations which involve the soft tissues of the oral cavity. Let us deal briefly with what is called sensation. Irritation to a sensory nerve filament, either functional or traumatic, results in the immediate transmission, under normal conditions, of the result of that irritation throughout the entire substance of the nerve until the center governing its action is reached, and also the transmission of the stimulus for co-ordinate muscular action along other systems of nerve fibers which radiate from these centers.

The amount of time required for the complete progress of an impulse throughout these systems is infinitesimal, and the continued irritation, as for instance that from a revolving bur, results in a constant wave of vibration of the substance of the nerve cells which enter into the entire system in action. The effort at control which is attempted with more or less success by most patients adds another though similar burden to the nervous system. Together these may result in a more or less complete exhaustion of the tis-

sues of the body. It is well understood by those who have made special study of the manner in which muscle cells are controlled that the impulse to contraction and the opposite impulse to relaxation are governed by two distinct systems of nervous fibers, with their minute filaments, which act in opposition to each other. Perhaps the best illustration can be found in the walls of the arteries. Here we have a system of tubes whose caliber is of constantly varying capacity. Certain systems of nervous control act to reduce the capacity of the artery by contraction of its muscular walls, while other systems act to dilate the walls and increase the capacity of the artery. Under normal conditions these two opposing forces result in accommodating the entire arterial system to the work which is required of it. If from any cause one or both of these agencies for control fail to perform their functions, there is at once a condition of disease which may be temporary or may pass to the chronic state. All functional phenomena of this character are due directly to the effect of stimulation or irritation of those filaments of nerve tissue which compose the systems whose office it is to govern the varying functions of the body.

Bearing clearly in mind the way in which irritation impresses these tissues to action, let us dwell for a moment upon the result under varying conditions. In the case of a normal healthy subject these tissues respond with greater or less intensity in accordance with the type or character of the individual, and a reasonable amount of irritation followed by the resultant activity of function is not harmful and does not produce exhaustion. If over-exhaustion does not take place, the ordinary amount of repose or freedom from irritation results in complete restoration to functional vigor, without greater loss of vital force than the ordinary nutrition to and elimination from these tissues can accommodate. On the other hand, if these tissues form part of an economy which is impaired from any cause and are diseased, they do not recover their normal tone as readily, and the result of the irritation is to leave them in a condition of greater disease and to interfere with their return to the physiological state. This brings us to a consideration of the tissues of the subject upon whom we are to operate.

I think any intelligent man would agree with me that it would be unwise in the extreme to attempt heroic operations upon the teeth of a patient who was convalescing from typhoid, or who had just passed through a similar period of disorder. If this be true, there must be a reason for it, and if there is a reason, does it not in a degree bear a direct relation to the factors which should govern us in our judgment as to the ability to undergo an operation in the case of every patient who presents for our attention?

Admitting as we must that irritation necessarily results in stimulation to cell action, and that prolonged cell activity produces loss of vital energy, which if carried to complete exhaustion must be compensated for by more than the usual amount of repose and nutrition, we must acknowledge that a point may be reached in a normal subject where harm can be done and disease produced. If this be true, is it not logical to assert that when a condition of

disease or impaired function exists that point would be reached sooner, and that such a patient cannot be carried beyond the ability of an immediate recovery of equilibrium without placing the blame for the production of additional disease upon the operator?

In connection with this we are called upon to weigh the amount of irritation which may be removed, by the restoration to comfortable function of the impaired organs, and also the gain to the patient by the removal of what must be considered as a constant source of discomfort, which is simply another word for irritation. It is conceded that the amount of disease which may follow in the case of a set of badly broken-down, decayed teeth, with all the train of disorder associated with such a condition, may overbalance any good which their presence can influence, and that the patient might perhaps be better without them; but if a condition presents in which their results have destroyed the health of the patient and the entire system is removed from functional equilibrium, and the elements of which it is composed are impaired to a considerable extent, are we justified in subjecting this patient to the additional wear and tear of permanent operations without preliminary tonic treatment, making such temporary work as is demanded meanwhile? It is considered good practice to place temporary work in the mouths of some young children for various and good reasons, and there are other cases of young children where the operator feels justified in placing permanent work. There are reasons for these things, and it is the consideration of these reasons and the study of the conditions which surround not only the cases of these younger patients but those of more mature years which has led me to dwell upon the importance of this subject.

Why does our honored friend Dr. Black begin with a thorough examination of the soft tissues of the oral cavity before proceeding to an exploration for caries of tooth-structure in any case that comes under his care? Is it not that he wishes to recognize possible pathological conditions, and that an intelligent operation must follow a complete knowledge of the environment of the organ to be operated upon? If his exploration of the soft tissues revealed to him a carcinoma at the base of the tongue, he would hardly enter upon the treatment of that case by the placing of bridges, crowns, or gold fillings.

Such thoughts as these have brought me to a realization of something in the line of duty which I have reason to believe has not been given the attention which it demands, and I am satisfied that the progress of our profession demands a careful consideration of these questions.

I believe the time has come when we should not limit our observation to the oral cavity, but should consider the entire economy and pass judgment on its condition before we enter upon the operations which are generally considered as the practice of dentistry. I believe that Dr. Black does this and that he does it well, also that every member of this club does it in greater or less degree; and I also believe that great good will come if the importance of this matter be impressed upon the mind of every dentist.



We might consider a case: that of a young mother who has not only the care of her children and her household duties resting heavily upon her, but is confronted by the fact that her income is insufficient to meet the legitimate expenses of the social layer of which she forms a part except by the exercise of the strictest economy. The conditions which surround her life have overburdened the vital resources of her economy until the tissues of her body are impaired. An examination of her teeth alone will not reveal all this clearly, and yet, can an intelligent operation upon those teeth be done until the entire matter has been weighed and passed upon? An unthinking man might assign her to a series of tedious sittings which would not only exhaust the already impaired tissues, but would bring her face to face with additional cause for economy and privation, with its added mental as well as physical strain. If this should result in a further impairment of her health, and perhaps an illness which would add to her burden in every way, would the operations be justified? Would the result be success, or might not the unthinking man be charged with the evils which followed in the train of his misdirected efforts?

If a child of tender years were subjected to such treatment as resulted in the establishment of an inherent horror for everything that pertains to dentistry, can the most magnificent restoration of tooth-structure compensate?

It might be wise to consider the results of inattention to such matters. I believe it is generally acknowledged that there are periods of immunity from decay, but that the laws governing this much desired condition are not perfectly understood. Let me present a train of thought along this line. If a subject presented in whom the general health was perfect, the organs of mastication being in full vigorous functional activity as well as unimpaired by caries or having suffered from previous disease;—if this patient were enabled to live a correct life, amid ideal surroundings, we might reasonably expect immunity from decay, and, in fact, disease of any kind. Subject this patient to conditions which would produce disease, and in direct ratio with the severity of disease might we expect departure from immunity. Granting that this is true, it becomes the duty of every practitioner of dentistry to contribute the entire weight of his influence toward the restoration of normal function and the maintenance of a condition of perfect health in his patient, and he should encroach upon the dangerous ground which lies beyond the present with care and judgment.

If you have accepted the statements I have made, you will admit that the effects of shock may contribute in a considerable degree to the future health of the patient, and that in the great majority of our patients we are dealing with an economy which is impaired and which does not possess the power of resistance or of recuperation in its fullest degree.

Should we not devote a larger proportion of our time to an attempt to bring about ideal conditions of health and a more suitable environment? and can we not assist largely in restoration to normal function by a broad, firm grasp upon the elements that control the

integrity of the human bodies which are given into our care? In so far as we depart from the purely mechanical and grasp the truly scientific we shall progress.

It has been my custom for years to limit the sittings of my patients to one or two each week, and to limit the time to from one to two hours, rarely going beyond unless forced to do so by circumstances over which I have no control. I have been impelled to do this by observation of the results of prolonged and frequent sittings upon myself and a number of patients of my own as well as of other men.

It was my misfortune, when a boy, to be given a two-hour sitting every day for ten or twelve days, and the time was often longer than contemplated. The result was a shock to my whole system, from which I did not recover for many months. As a student I required a delicate young girl to sit for over four hours while I attempted an operation which was beyond my skill. I saw the evidence of it in the following days, and, I believe, in the years, even to the present. I have placed a man of unusually robust constitution and in the most perfect health in my chair for a full day's sitting, at his earnest request, and have seen him endure the shock of the various operations, until toward night his courage failed him and he cried for mercy; and in these cases as well as others I believe the evil results have more than overbalanced the good attained. I believe that the wear and tear upon the nervous system in a large proportion of our operations may go a long way toward rendering the result very near a failure unless the greatest care be exercised.

The use of rapid methods of opening and forming cavities if skillfully done with proper instruments, and the methods of inserting the gold which are indorsed by this club, under skillful hands will greatly reduce the amount of time required for a given operation. A skillful and energetic though delicate manipulation of instruments and accessories, together with a complete set of the best instruments and appliances and the services of a trained assistant, are indispensable. A cheerful office, properly arranged, with good light and with modern fixtures, a plentiful supply of good linen, proper ventilation and numberless other things all combine to render the operation of more speedy accomplishment. The result is to detract from the shock produced, to minimize the wear and tear, and the man who successfully combines a complete appreciation of all these things, together with the skill that comes with years if his efforts be properly directed, may hope to see his labors producing results of which he may be proud and which will not fail. On the other hand, the man who ignores these conditions adds to the burden of a majority of his patients, and is responsible for the production of disease and for preventing conditions which favor immunity.

The study of physical diagnosis, together with the formation of the invariable habit of taking into consideration every available item of information which may be obtained by careful examination of the whole economy, as well as the soft tissues of the oral cavity

and the teeth themselves, will lead to a broadening of our mental grasp in all cases. Our services will be in greater demand and the standing of our profession will advance. A complete examination of a subject may result in the discovery that he is perfectly able to endure the operations. Sometimes a sitting or two may be required to prove up the sum of the elements which enter into the case, but the fact that most patients are able or can be made to endure the shock of the necessary permanent operations does not afford us a legitimate excuse for assuming that all patients can be handled in this way, and the development of diagnostic ability upon the part of the operator can only come from an habitual attention to the details which determine the condition of the subject as a whole.

The advance along the lines under consideration must result in the necessity for consultation with the family physician or with a specialist more frequently than is now considered desirable. I have been checked in a number of cases within the last few years by ascertaining as the result of consultation with the medical or surgical men that the patient was hovering on the losing side of a battle with disease, and in more than one case death has come within a few months.

Would the most perfect results of heroic operations in these cases have been a credit to any dentist, or might not he be justly criticized for the useless waste of vital force, and perhaps charged with adding the last straw which carried the patient down? We cannot as a profession afford to pass these things lightly, nor can we hope that the education of the general public, which we are all striving to advance and which is advancing very rapidly, will much longer permit to pass uncriticized a lack of appreciation of the matter, or its willful neglect.

---

## CLASSROOM METHODS.

BY N. S. HOFF, D.D.S., ANN ARBOR, MICH.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa., December 31, 1901.)

**N**OTWITHSTANDING the fact that the strictly didactic methods have been employed for so many years, and with such pronounced benefit, the popular idea at present seems to be centered on the objective or laboratory methods. This is particularly the case where methods of thinking and working are to be developed *de novo*, as in kindergarten work with children, or the newer sciences of biology, such as bacteriology, for instance. And these methods, for quite similar reasons, have been found the most useful in imparting instruction in the more distinctively technical branches of the medical and dental curricula. We are confident that all who have had much experience in teaching dental classes will value these methods highly, even if they do not deem them essential, in the purely mechanical or technical sub-



jects. We have, however, come to the conclusion that it is unwise to confine the methods of imparting technical instruction entirely to the laboratory methods, and believe that didactic principles, if not methods, have an important place in presenting these subjects to the mind as well as to the other perceptive senses.

As my paper must be brought within the compass of ten minutes I shall not be able to further elaborate this statement, but crave your indulgence while I refer to my personal experience, from which I trust you may be able to draw some conclusions which may be helpful in verifying or in changing your present methods.

When I was a student, and also when I began teaching, prosthetic technics was taught as a purely mechanical art. The instructor was called the "professor of mechanical dentistry." This condition remains unchanged in many schools at this time, although most generally the instructor is now a *prosthetist*, and a separate department of prosthetic technics has charge of the purely mechanical branch. Formerly the student attended the lectures on mechanical dentistry and spent so much time in the laboratory, constructing, with the aid of a demonstrator, such experimental work as his conception of the principles given in the lecture course would permit.

After a short experience with this method I came to the conclusion that it was unsystematic and perilously faulty, and besides, the time given up to the laboratory part, at least, was not wisely spent. A change was made in the method which promised to remove at least some of the objectionable features. This involved the separating of the technical from the didactic instruction and the placing of the technical course under separate instructors and its more systematic development as a purely technical subject while at the same time it should be made to harmonize and, so far as practicable, co-ordinate with the lecture course on the principles and art of prosthesis.

To briefly outline the course, with which most of those present are doubtless familiar: Models which would best illustrate ideal cases were prepared, representing in a systematic gradation all the more useful prosthetic appliances, and from these metal casts were made from which students might secure a uniform set of models for the construction of the plates and other appliances of the course. Each piece of work was then taken up consecutively and presented to the class in all the details of construction by means of a class demonstration, without discussion of its art or practical significance, but with all necessary comment needed for its mechanical construction. Each piece of work was constructed before the class in accordance with one method only, with slight comment on other methods which could be sanctioned or on some which it was thought wise to condemn. The idea was that if the student could see one good method successfully demonstrated he would be able to copy and retain it. My experience with this method has not been without criticism. It has accomplished practically what it was designed to do, and in a fairly

satisfactory manner; it has not developed a mechanical genius where only a poet or fiddler was planned by the Creator, neither has it succeeded in circumventing the designs of the indolent or incorrigible, or any other impracticable thing. But I have succeeded in presenting to the class in an experimental way a very satisfactory amount of technical work, practically covering the entire field, in a reasonable amount of time and without increase in equipment or instructors.

There have developed in the trial of this system certain shortcomings which it seems to me might be very well made good by slight modifications of some of the methods used. I find that many students, while conscientiously following the technical instruction, have learned to follow the copy so closely that they have forgotten to cultivate personal initiative, and so when brought face to face with a practical case not resembling in most details conditions with which they are already familiar, they do not seem able to even apply processes which they have learned very well indeed. I am not sure, however, but that this result is inevitable with any system.

Another result, which while perhaps not so serious is one which is quite annoying and a great hindrance to the highest attainments, is the fact that students are apt to look upon technical work as *task work*, and so perform it in a perfunctory manner, while occasionally an unprincipled or thoughtless student will maliciously abuse your confidence. It may not be practicable, by any means, to frustrate the designs and purposes of such students, and it may not be wise to modify well-conceived and practicable methods in the hope of compelling lazy students to do their duty or unprincipled ones to do right; yet it would seem that any means which can be employed to such an end would not detract from the work of interested students, and might serve to still further increase their enthusiasm and love for the work.

For the purpose of correcting the first criticism, and to give the technical work a more artistic if not practical bearing, and of removing the seeming objection that it is an altogether elementary and mechanical task, I have this year added some features to the instruction which I hope will correct this tendency and at the same time not detract from the value of the course as a method of cultivating hand-craft. I have sought to introduce only such work as should have a direct influence in the cultivation of technique, but which at the same time would appeal to and draw out the dormant talent, whether technical or artistic, and demand more or less mental co-operation.

After the first work in the technic course has gotten fairly well started,—and this work consists in taking impressions with wax, compound, and plaster, each student taking the impressions from his bench-mate, and pouring the impressions in plaster,—two or three class hours are devoted to a consideration of the surface anatomy of the mouth, especially the teeth and gums, and the occlusion of the teeth. This is done by lectures and quizzes upon the teeth, the students having for reference the plaster models

which they have made, introducing as much of the nomenclature as may be necessary to make descriptions intelligible. The result of this is to first cause the student to make a more careful examination of the mouth of the patient or chum for whom he is at work. He becomes more familiar with the form and markings of the teeth and gums, and at the same time he notes discrepancies and strives to obtain more perfect models. The value of a perfect model in all prosthetic work is continuously kept before him while he is engaged in this work. As soon as this work has been satisfactorily completed each student is given a natural incisor, bicuspid, and molar tooth, as nearly sound as it is practicable to obtain, and he is asked to carve a tooth from a block of plaster of Paris as near the form as he can and with all markings, but magnified about five times. I was quite gratified at the interest developed by this exercise and also surprised at some results obtained. From this exercise I have gained a considerable insight into the intellectual and artistic capacity of each member of the class. To still further test this artistic capacity and to develop the more mechanical side of the technical subject, I next devised a combination steel wax-spoon and carver, with such lines and angles as would not only test but train and develop mechanical abilities. A drawing of this instrument with measurements was made and a duplicate copy furnished to each student. The instrument was then made before the class in demonstration from bar steel, every step, including forging, filing, finishing, tempering, bluing, polishing, and burnishing, and the finished instrument placed in the laboratory where it could be inspected and measurements verified. The rounded curves and definite angles and sizes proved a somewhat serious task to some, but the final result was on the whole quite satisfactory, as the interest and enthusiasm created quite compensated for the time devoted to this work.

These exercises have served to give me a better knowledge of the mechanical conceptions and possibilities of this class than was possible by any other means; and this knowledge will enable me to present the more practical technical subjects which are to follow in a way that will draw out these same resources to the best advantage. This result, too, has been obtained without losing the confidence or interest of the class, and the work has been done in such a way that no student could shirk it and report a result to which he is not entitled.

The future work of the course will be confined to plate crown and bridge technics, and, as it follows somewhat closely the lecture course in prosthetic dentistry, there will be more opportunities for the introduction of interesting or practical incidents which will claim the attention of the students. I am planning to show before the class cases from the clinic which will illustrate the application of the various methods taught in the laboratory course. If by such means I can retain their attention and interest, I am confident that the results will be shown in a higher grade of technical skill on the part of the worthy students, and such as have little natural ability or lack of capacity for acquiring



it will be easily and unquestionably found out, making it possible to discourage them from the further pursuit of a calling in which hand-craft is such an important factor. For this purpose no other course in the curriculum is so well adapted, and anything which can be added that will make it possible to get more light upon this subject will be worthy of consideration.

---

## METALLURGY: HOW TO TEACH IT.

BY JOSEPH D. HODGEN, D.D.S., SAN FRANCISCO.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa., December 31, 1901.)

**P**REFATORY apologies are in bad taste as a rule, but the title of my paper smacks so much of presumption on my part that I cannot refrain from saying that I was programed and my paper entitled by my friends; and, being "in the hands of my friends," as they say in politics, they, and not I, are responsible.

Teaching metallurgy does not differ largely from teaching other subjects in the dental curriculum. Therefore, like other subjects, the time has passed when teachers agree that this subject can be taught in dental schools by long, tedious, and tiresome lectures, without text-book and without laboratory work. The time is also passed, or should be, when this subject is thought sufficiently taught by any other than one of our own profession. I do not mean to disparage the didactic efforts of those teachers who are without the circle of our calling, but I do wish to emphasize this fact, that it is not metallurgy we desire to teach, but dental metallurgy,—metallurgy applied to dentistry. And it is obvious that no one but a practicing dentist can properly apply this, or any other science or subject in the present dental curriculum.

I have long since recognized that the average dental student takes hold of no subject in the curriculum with the same reluctance he does with the subject of metallurgy and its parent subject, chemistry. It is, then, the first duty of the teacher to dispel this reluctance on the part of the student for the subject. The curricula of our schools are constantly criticized by the layman, the student, and even the physician often, as attempting too much (not to use harsher expressions), in the apparent attempt to teach more science and deeper science than in the judgment of our critics is absolutely essential for the practice of dentistry. I do not mean that such criticism is warranted, but I do venture to say that in the mind of the thinking student, or the thinking layman, or the thinking physician, the prescribed course of study in dentistry, like that of any other, cannot be too thoroughly, too scientifically, and too broadly taught. Nevertheless, the average student is constantly questioning, "Why so much metallurgy, why so much chemistry, to practice dentistry?" and this, unsatisfactorily answered in methods of teaching, accounts for much of the reluctance.

To discuss this "why,"—to discuss broad and liberal education, to discuss the education of students in the sciences which go to make up the science of dentistry, that they may be able to deduce therefrom the principles of practice,—would be presumption at this gathering of teachers. These things are apparent to all.

Too many students are permitted to enter our colleges with the mistake that they are to be taught as parrots; that they are to be drilled from the awkward squad into the scientific soldier of practice. And why not? Are not legions of our fellow practitioners practicing in imitation of one another, without asking why?

Since, from their narrow point of view, students see so little chemistry in the practice of dentistry, the relationship appears so obscure, and so little dentistry is taught with chemistry and metallurgy, is it any wonder that they take to the subject most reluctantly?

I therefore repeat: it is the first duty of the teacher to dispel this reluctance. This may be done by making the subject an interesting one, by demonstrating its close relationship to dentistry, and by pointing out how invaluable the knowledge of chemistry and metallurgy is, in the scientific practice of our calling. Then the question arises, How can we best make it interesting and show its value? It is no easy task to interest a class in chemistry or metallurgy, but I have found that it may at least be partially accomplished by going deeper into the subject, and making it admired for its own sake, by making it as practical as possible and filled with everyday wants. No one is more inclined to teach theory and truths for truth's sake than I, but cold theory, naked facts, and incomprehensive laws are not attractive to most students. No doubt much theory is essential, but it must be so skillfully clothed with practical application that it is not only presentable, but positively attractive.

I can best make my ideas clear, perhaps, by detailing my own method of instruction: First, I am an ardent advocate of a good text and recitation; second, I would relegate all so-called "lectures" to old methods, doing no more in that line than elaborating where the text, to avoid voluminousness, is insufficient, and explaining where the text is lacking in perspicuity; third, I depend upon the laboratory for two-thirds of the instruction.

Following this idea, the student is assigned a chapter in the text, which he prepares for recitation and laboratory advantage. The subject studied in the assigned chapter is first wrought out in every possible detail by the student, with the aid of his text and laboratory manual, in the laboratory. A recitation is then held at which the teacher observes where to explain and elaborate. In this method the student has three opportunities of learning the subject, and it can be presented theoretically, practically, and applied from every point of view.

*The text* I employ devotes its first five chapters, of nearly one hundred pages, in a more or less introductory way, to "the properties of metals," which is a physical view of them; "the combi-

nation of metals with non-metallic elements," which is a chemical point of view; and "melting metals," and "alloys," which are strictly metallurgical. These chapters may be gone over more or less rapidly, as the teacher desires.

*The Laboratories.* Four rooms are allotted to the laboratory instruction of chemistry and metallurgy, plans and photographs of which accompany this paper as part of the exhibit. These rooms comprise what we generally call the chemical laboratory, which is used also for the wet and small metallurgical work; a preparation room, for the use of instructors; the metallurgical laboratory, which may be entered from the chemical laboratory as well as from the hall, where the furnaces, forge, cupel furnace, lockers for unfinished work, rolling-mill, anvils, cases for apparatus, supplies, etc., are to be found. Off of this is a professor's room, which is the executive part of the laboratories, and a repository for books and easily injured apparatus. All rooms connect with a large hall.

We call the time spent in the laboratories weekly, "laboratory periods." These are on Mondays from 1 to 4 o'clock, and the recitation is from 4 to 5. The periods occur, therefore, just before the recitations. The first period is entitled "assignment of lockers." The student pays a breakage fee of five dollars, receives a numbered receipt, and has his choice of locker in accordance, though there is really little or no choice. Thirty-two articles of apparatus, etc., contained in each locker, are then invoiced to him, to see that they are in perfect order, after which he is absolutely responsible for the same, and must *at all times* have at hand each article. If he breaks or ruins one, the instructor gives him a requisition on the office, where the student is charged with or pays the price of the new article, and returns with an order on the laboratory supplies for what is wanted. No smallest article or reagent can be removed from the laboratory without a requisition from dean, professor, or instructor of chemistry and metallurgy; so we are enabled to "keep stock." A list of these "senior requirements," or locker contents, together with a copy of the first and all periods, and a requisition blank, are exhibited.

Six long benches accommodating nine students at a time, and provided with three sets of lockers, one set each for freshman, junior, and senior classes. Each student is supplied with separate gas-cock, and water in reach. A set of thirty-six reagents and twenty-five salts, metals, etc., supplies one-half the bench, a duplicate lot supplying the other half. A list of these reagents accompanies the exhibit.

*Laboratory manual.* We have a manual in prospect as soon as our experience is sufficiently ripened, but at present we are using "advance sheets," as it were, done on the mimeograph and handed to each student. These, under the name of "senior laboratory procedure," numbered periods, accompany the exhibit.

*Note-book.* Nothing is more essential in laboratory work than a proper note-book. The study of chemistry and metallurgy demands a thinking application. The note-book serves a manifold



purpose. Prominently, its advantages are—(1) The student is able to carry from the laboratory more, and more accurate, knowledge than is possible by mere memory or temporary comprehension; (2) it stimulates a real thinking process of how and why, so important in the study of a science; (3) it supplies an opportunity for expression of thought, review, study, and correction of errors; (4) it enables the instructor to determine what experiments are best suited for teaching certain theories and truths; to comprehend the individual work of each member of the class; to take the roll, etc.

Our note-book (a new and a used copy is presented with the exhibit) is sold to the student at the small cost of ten cents a copy. The notes are made in manifold by the use of a carbon sheet; the original is torn off at the perforation and dropped into the desk, as into a letter-box, for the instructor, as the student passes from the laboratory. The carbon copy is retained in the note-book for the use of the student. The instructor looks over the notes, corrects errors, takes the attendance therefrom, and learns the best method of teaching and the progress of the students. The cover of the note-book gives all the necessary laboratory rules and suggestions, and a list of abbreviations.

*The course of instruction.* To more than outline this would be tedious to those not interested in the instruction of this subject. I will therefore content myself with again referring those interested to several copies of the text, copies of the "senior laboratory procedure," or "periods," the note-book, etc., which are among the exhibits, trusting they will avail themselves of the opportunity of looking them over, and offer in discussion whatever suggestions may occur to them in the perusal of the same.

I would, however, explain that the course comprises twenty-eight weeks, of three hours laboratory instruction and one hour recitation, per week. Further, that the first individual metal considered is "*Lead*," Chapter VI, and with it the sixth laboratory period. This is discussed first for the reason that its metallurgy is simplest. The student is here taught the simplest character of reduction, tests, etc., the preparation of the simplest alloys (lead and tin), and the casting of the easiest ingots. Hence this metal seems a logical beginning of the study of metals. "*Antimony*" follows,—without a laboratory period, from the fact that it is little used outside of alloying, and this is practically considered under other alloys. Two recitations and two laboratory periods are given on "*Tin*," on account of its prominence, the practical work it affords, and the ease with which it is handled.

In "*Copper*," most difficult alloys of brass are made. Some of these are swaged into metallic bases for specimen work in prosthetic dentistry. An electro-deposited base of copper is also made, the student making the cell or battery in a glass tumbler with copper and zinc as elements and copper sulfate solution as the excitant, preparing the cast and using a crystallization dish containing copper sulfate solution as a bath. The base may afterward be tinned and vulcanized upon for specimen work.

Under "*Zinc*," the basic zinc cements are prepared from the metal, shaded with slate, etc.; this forms a good practical lesson.

In "*Silver*," two laboratory periods and two recitations are held. Refining the metal, preparation of pure silver nitrate, alloys for various purposes, and solders are made, obviously more for their technical than practical value.

In the consideration of "*Gold*," five laboratory periods and four recitations are held. The student is required to bring to the laboratory gold scraps, filings, old jewelry, or other alloys, containing at least two and a half pennyweights of pure gold. This is first melted in a button and tried on the anvil for its malleability. If malleable, some bismuth, lead, antimony, or what not is added by the instructor, record being kept of the addition by him and by the student, and the whole is then roasted until malleable again,—teaching the method of rendering brittle gold malleable. The student is taught that this process does not necessarily raise the karat of the gold employed, or, in other words, is not a refining process.

To refine the button it is alloyed at the next period with three times its weight of silver, and the "quartation" process gone through with. This, as a rule, with a careful student, gives gold of about 997 or 998 fineness. Taken in the form left by quartation refining, it is placed in aqua regia for greater refining. From this we usually obtain from each student a gold of sufficient fineness to roll to No. 30 or beat to No. 4 foil, some of which is exhibited. A portion of this is used practically to fill either a tooth in the mouth at the infirmary or an extracted one (see exhibit). One of the greatest truths taught is that pure gold exhibits the property of welding when cold, and the greater its purity the greater its weldability. The student is too apt to think the various preparations of commercial foil, pellets, etc., are treated in some way to make them weldable. He is confused by the terms "hard," "soft," "cohesive," "non-cohesive," "semi-cohesive," etc. This work teaches two kinds of foil, *pure* and *impure*, respectively weldable and non-weldable. Gold base-plate and solders are made, partially supplying the wants of the infirmary, while at the same time teaching the student.

The last two chapters of the text are devoted to the consideration of "*Amalgams*," and furnish four recitations and four laboratory periods. Our laboratory work on this subject, I feel, is yet undeveloped, on account of the want of expensive equipment. Each student prepares and studies several different dental-amalgam alloys, and analyzes old amalgam plugs. But I am confidently hoping to perfect the course by the use of Dr. G. V. Black's instruments and methods at no late date; then our opportunities will be unsurpassed. For a long time all the dental-amalgam alloys used in the infirmary have been made by the students, or under the direction of the laboratory instructors.

Each student pays a deposit of five dollars on taking his locker in the chemical or metallurgical laboratory. He replaces each article with which he is furnished, at the time it is broken or

destroyed, at his own expense, and is returned four dollars at the end of the session, the remaining dollar of the five going to replace the laboratories in proper condition for the next class. In this way, by careful, systematic, and economic management, the laboratories are just about self-sustaining.

I trust you will pardon the length and uninteresting character of the paper, and also my constant reference to the subject of chemistry. I regard metallurgy as but a part of the greater subject, chemistry, and so inseparable that the former cannot be considered without dealing more or less with the teaching of the latter. My time, taste, study, inclination, and devotion has been and is almost exclusively chemical, therefore the study of pure chemistry and dental chemistry has been my hobby, and metallurgy is more or less incidental.

Thanking you again for your patient attention and consideration of my exhibit, I will close.

### A CASE OF PORCELAIN BRIDGE-WORK.

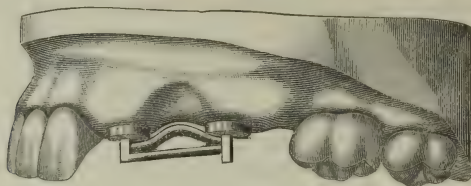
BY GEORGE W. SCHWARTZ, D.D.S., CHICAGO, ILL.

(Presented at the clinic of the New York Odontological Society at the meeting held January 21, 1902.)

**I**N presenting this case of porcelain bridge-work to the Odontological Society of New York, my object is to show a recent improvement in a method I introduced to the profession some years ago.

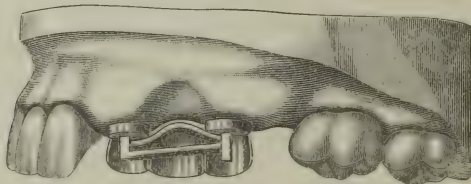
Originally I constructed the metal work as shown in Fig. 1. In

FIG. 1.



a few cases where the occlusion was very close some of the inner cusps were broken away by the force of mastication. To overcome this I began soldering backs to the metal work, as shown

FIG. 2.



in Fig. 2. This is the improvement, and I feel safe in recommending it to porcelain workers.



This is a bridge without a saddle, and does not produce irritation at the interproximal spaces of the abutments.

*Brief Description of the Bridge.*

The bands for the abutments are 29 gauge platinum plate.

The caps are 29 gauge iridio-platinum plate.

The posts are heavy square iridio-platinum wire.

The cross bars are heavy round iridio-platinum wire.

The backings are 29 gauge platinum plate.

Twenty-five per cent. platinum solder was used throughout.

FIG. 3.

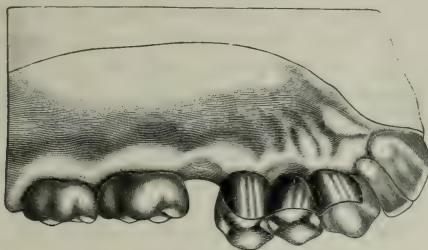


FIG. 4.



Figs. 3 and 4 show the completed case after the porcelain has been baked.

## CLASSROOM METHODS OF TEACHING.

BY L. S. TENNEY, D.D.S., CHICAGO, ILL.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa., December 31, 1901.)

THE problem of classroom teaching is one that has received a large share of the attention of this body, for next only in importance to the question of what studies should constitute a complete dental curriculum in order to afford the most thorough and efficient course of instruction is the problem of presenting those subjects in the most effective manner and in a

way that will result in the broadest development of the student and best fit him for the demands of his work.

In a paper so limited as this I cannot attempt other than a few random thoughts, and as a teacher in the operative department of our work it is proper that I should confine myself to that subject.

The laboratory method of instruction is a development of recent years, and is rapidly finding a place in nearly every department of our college work. In *materia medica*, anatomy, physiology, and bacteriology not only is a large amount of illustrative material now made use of, but more actual laboratory work is required of the student than ever before.

We need hardly discuss the merits of this method of teaching; its value is too obvious, and it has become too fully recognized by us all. It is to-day, and must ever remain, the most important feature of our educational system; and the only question is what proportion of our time may be justly allotted to such work. Operative technics, occupying as it does a most important position between the theoretical and the strictly practical, and connecting the two, should, in my opinion, receive a larger share of our attention than it does at the present time.

In the use of these terms, however, I wish to say that I was much impressed with the position taken by Dr. E. C. Kirk in a paper read before this Institute a few years ago, in which he took exception to the common expression, "practical and theoretical," when applied to dental teaching. He contended that our course embraced no subject whatever, if I understood him correctly, that could not be regarded, in its broader sense, as practical. And yet the long-established custom of designating studies as practical or theoretical, according as they relate or do not relate directly to technical procedures, has fixed rather a clear line of distinction between them; and it is in this sense only that I use these terms.

But with reference to the teaching of operative technics, I feel that we not only do not do full justice to the subjects now embraced in this course, but that other and most useful ones should be added. We are to-day carrying this teaching but little farther than we did when the course was first introduced, although it will be admitted that our methods have greatly improved since that time. That we have kept it within its present limits has been to a great extent a matter of necessity, since the length of the college course would not permit any material broadening in the scope of the work; but when a four-year curriculum shall have been inaugurated, that curriculum should include an advanced course in operative technics.

If I were asked in what particular the work should be enlarged upon, I would state that in my opinion we should not only require more extensive experimental work with reference to the character of all structures operated upon, and the physical properties of all materials employed in these operations, but that the proper place to teach first-year operative dentistry is not in the lecture-room, but in the laboratory, where lectures upon this subject might be amply illustrated and be supplemented by laboratory drill.

To me, this method of teaching operative dentistry would appear to be the logical outgrowth of our many years of thought along the lines of technical training, and, in the light of past experiences, the time seems ripe to transfer this whole subject from the lecture-room to the laboratory until the student has mastered all the technical details possible and is prepared to enter directly upon his infirmary practice, thoroughly trained in every phase of operative work. Limitations it must have, since laboratory practice can never take the place of practice upon the living subject; but in the former there is still opportunity for much improvement, for we have by no means developed as yet all the possibilities of training of this character. Mere knowledge of detail, however, is not the only benefit to be derived, for in the laboratory only can the student acquire that manipulative skill that will enable him to successfully prosecute his infirmary work; and to this end his technical training should not only be made more thorough and comprehensive, but should immediately precede infirmary practice. I can make only this brief reference to the matter, however, and hope to hear some expression from you in the discussion of these papers.

On the subject of laboratory teaching in general. I wish to say that to me there has always appeared to be a tendency on the part of the student that we must early endeavor to correct,—a tendency to do his work in a mere imitative way. If, for example, he is preparing a cavity in a tooth-form, he follows the demonstrator closely, observes his method, inspects the cavity he has prepared, and, having noted its exact position, its form and its dimensions, proceeds to copy it with little or no thought of the principles involved. He works by rule and subordinates principle to mere detail.

That method of technic training is most effective which teaches principles and then encourages the student to reason out their application. Every opportunity possible should be afforded for self-instruction, since all authorities agree upon this to-day as being the most rational system of education. The very character of our work demands originality in thought and action, and our efforts should be constantly directed toward its development. A student should follow his demonstrator intelligently, but not blindly; he must be guided, but should not merely imitate. Self-reliance should be encouraged from the start, knowing, as we do, that his future success will depend largely upon his own individual judgment. The reason for every step and the principles involved should be made most emphatic. To know why cavity margins should be beveled, and why cavity walls should be extended, is of vastly greater importance than the mere technique of those operations. Not that I underrate the necessity of exact technical training; but, once get the underlying principles implanted in the mind, and any man can solve the problem of detail for himself.

Again, since the knowledge we acquire through our own experiences and through scientific investigation is of the greatest and most permanent value, more time should be devoted to work of this character. All other methods of teaching are fast giving way to that more rational system where knowledge is based not on the



statements of accepted authorities, but upon carefully determined scientific facts. Indeed, we have long recognized and are adopting this system, although we are not as yet giving it the attention its importance demands; and it is along this line that we ought to enlarge on our laboratory work. The field is wide and the opportunities would appear almost unlimited.

Gold in all its forms should be studied experimentally; the conditions necessary for perfect cohesion, the effect of impurities illustrated, its behavior under pluggers with serrations of varying depth; tests applied to determine density and resistance, together with experiments illustrating clearly the results of imperfect adaptation. The study of amalgam should be carried on in the same practical manner, showing its tendency to change form, with subsequent tests for leakage; the right proportion of alloy and mercury, with tests for density and edge strength. The study of cavity preparation should be most exhaustive and largely experimental in character, illustrating the mechanical laws involved, determining the degree of resistance offered by fillings, and demonstrating the various methods of instrumentation.

In short, this method of experimental teaching should in a large measure supplant all others, for it is evident that a student possessed of the knowledge thus acquired has a clearer conception and a firmer grasp of the facts than he could possibly gain in any other way. He is brought to realize clearly that exact scientific knowledge must be the basis of his work.

In the consideration of teaching methods it would seem proper that I should call your attention at this time to a new feature in the construction of the flexible rubber dummy. The introduction of this dummy marked a distinct advance in our technical work, offering, as it does, possibilities scarcely thought of before. The dummy as presented here to-day does not differ materially from those presented at previous meetings by Dr. Webster, Dr. Byram, and others, aside from the method of obtaining the vulcanite teeth.

In a number of colleges the method practiced heretofore has been to require each student to carve a set of teeth in vulcanite or other suitable material; and while not wishing to be understood as criticizing the work of others, I will state that my own experience has been that the carving of these teeth involved the expenditure of too much time and effort, and offered too many technical difficulties, to be practicable. That the carving of a full set of teeth would be an excellent training no one would deny, but the question arises as to whether the results secured would be in just proportion to the time required. We are endeavoring to make our course as thorough and comprehensive as our time will permit, and we must not devote too much attention to any one feature at the expense of others of equal importance. The carving of four, or at the most, six teeth, therefore, is all that I have ever felt justified in undertaking.

The problem of securing molds in which teeth might be vulcanized was suggested at our last meeting by Dr. H. J. Goslee. and since that time the matter has been taken up by Dr. C. F.

Bryant, who after repeated experiments and discouraging failures, finally produced a set of molds with the results as shown here to-day. These teeth, finished and ready for use, are now furnished the students at nominal cost. They are then arranged in wax and the model properly carved and covered with heavy tinfoil, after which the case is flaked, packed, and vulcanized. I have adopted this method in this year's course with the most satisfactory results. Out of the entire class there has not been a single failure in the construction of the dummy, and a wide range of demonstrative work has been made possible.

In the early part of anatomy teaching I hold frequent but short written quizzes, requiring that all note- and text-books be laid aside, but allowing the students to converse freely. We all know how timid the beginner is in the use of technical terms. This method familiarizes him with the use of such terms, inspires confidence, and for this purpose, if for no other, has proved helpful.

Instrument-making is limited to about a dozen or fifteen typical forms, feeling that with the present length of the course anything further than this would require the outlay of too much time.

In ivory carving we use no measurements except the outer dimensions. As the piece begins to assume definite form the calipers are discarded and the characters of the tooth are judged by the eye alone.

In the teaching of cavity preparation, after discussing general rules and requirements, and when some practical work has been done, I suggest the position and approximate outlines of a new cavity, and then require each student to prepare such a cavity with nothing to guide him but his own conception of what its form should be. It brings out a discussion of principles as nothing else will.

The work of the course should be arranged and classified with reference to its bearing upon the more closely related subjects, with the view of employing as many methods as possible to illustrate each subject considered. Carving should be done during the teaching of anatomy, and root-canal technique should immediately follow. Instrumentation should begin with cavity preparation and be continued along with it. System and intelligent arrangement is of the utmost importance, and should be observed throughout.

---

## THE TEACHING OF PROSTHETIC DENTISTRY.

BY GEO. H. WILSON, D.D.S., CLEVELAND, OHIO.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa., December 31, 1901.)

FROM the make-up of our program it is very evident that the thought uppermost in the minds of the Executive Committee was, "How to Teach." A more central thought or a more inviting subject would have been difficult to find. Should we have many positive though opposite views expressed, and each writer and speaker should assert that his method is the nearest to

perfection, he would be excusable, because it is to be hoped that every man who has been teaching from five to fifty years has developed and is pursuing with all his might his highest ideal. It will be deplorable if there should be one of us so self-sufficient that there will not be at least one point so strongly presented to the mind that through it his work will be better for the remainder of the year. The same idea may be presented several times, but that will only demonstrate its utility and confirm the users in its value.

In my own mind I am satisfied that the teaching of prosthesis is the most important subject in the dental college curriculum. There are several reasons for this. I believe that it is universally a study of the first year, and, being the one so-called practical study, it is the most attractive and appeals the strongest to the student's heart. For this reason the teacher of this department has a great responsibility resting upon him. It is within his power to mold the plastic clay of the human minds about him so as to develop broad-minded, liberally educated professional gentlemen, or it is possible for his influence to be toward the other extreme, a mere mechanic, and such as a young man in a dental parlor described when he said, "A man cannot be an honest man and practice dentistry." The ideal teacher of this department will inspire the student with the necessity of the correlated branches of anatomy and chemistry; the importance of these branches being established, the others assume their natural relationship. It is this teacher who has it in his power to first establish by example the meaning of "a professional gentleman"; and this department first demonstrates the necessity of manipulative excellency. Many of the students entering the schools have the minimum preliminary educational requirements, and many of these have spent several years in pursuits that have not tended to keep at par the training with which they are accredited. Therefore it is possible for the unsympathetic, unprepared person trying to teach this department to spoil many a diamond in the rough.

The questions naturally arise, What are the methods necessary to make the most of this department, and how are they best used? We make the assertion that all methods have virtues, and the best results are obtained by the best combination of the various methods. The difficult problem to solve is, What is the proper ratio of one method to another?

There is one factor in successful teaching that must not be lost sight of, because it is the essential element of all meritorious work,—that is, the teacher's individuality; but that is entirely outside of the pale of our subject, and can logically only be mentioned, not considered.

We will classify the methods of teaching prosthesis as follows:

$$(1) \text{ Didactic } \left\{ \begin{array}{l} \text{Lecture.} \\ \text{Classroom.} \end{array} \right\} \left\{ \begin{array}{l} \text{Quiz.} \\ \text{Recitation.} \end{array} \right.$$



- (2) *Technic* { Class as a whole.  
                   { " in sections.  
 (3) *Practical*.

*Didactic.* This general method we place first because we believe that it is the most important of all the methods in producing professional men; the technic and practical methods develop the artisan. Without this essential phase of dentistry our calling would be a failure; with the higher intellectual and moral training it is lifted out of the common, to the more exalted position of a profession,—thanks to the noble character of the leaders and teachers of dentistry forty and fifty years ago!

The didactic system contemplates two distinct methods,—the lecture, in which the teacher does the talking, and the classroom, in which the student does the principal part of the talking.

The lecture we place as the most important of the didactic methods for producing professional men. The lecture-stand is naturally occupied by the older men of the school. "Old men for wisdom, young men for action." The lecture-room demands the most active mental exercise, hence is the better fitted to develop mentality and individuality, the essential features of professionalism. The lecture is the place to teach economically the reason for and the philosophy of the methods taught in technics and practice. It is the place to teach students to receive mental impressions and to make practical use of them. It is very exasperating for a man of mind to hear a man of body say, when a principle has been thoroughly exemplified, that he does not understand it, but if he can see it done once he can do it himself. What mechanic cannot? It is this lack of mental development that keeps many men from dental societies.

I know that there is a great cry going up all over the land for practical methods,—practical, how to do something,—as though the ability to get the dollar and get it quick is all there is in this life. We of a more esthetic and broader mind must not be carried off our feet by this paroxysmal babble; we must think of the honor and glory of the profession we are to hand down to our children and successors.

*Classroom Methods.* The two subdivisions of this subject contemplate two distinct principles and are used for different purposes. The first, the quiz, is designed to supplement the lecture work, to see that the students have comprehended the matter previously taught, to aid them in grasping the thought and expressing it in their own words. It should aid the student to think for himself, and cultivate a taste for reading upon the subject in hand. The best results should be obtained by the lecturer quizzing upon his own subject. The recitation plan has for its central thought the idea of studying a book and putting into words a thought the student may never have heard expressed. The student must depend largely upon his own judgment what to commit and what to read over. He will be most fortunate if he does not find

that he has memorized the non-essentials and ignored the essentials.

It seems to me that the teacher should be a mentor, a friend to advise and point out the way, and not a taskmaster to see that a stunt has been done. This is the idea rationally implied by the two methods, but of course always modified by the teacher's individuality. It always impresses me that the recitation applied to mature minds was an acknowledgment of inability and unfitness upon the part of the teacher. The argument is often made that the recitation gives the student something to do, therefore he is interested. It is obvious that the lecture and classroom work is by word of mouth; someone must talk, and only one at a time. If the student can tell the story more concisely and impressively he certainly should tell it, but it is evident that the teacher is not the man for the place. The truth is, only a very few students make a good recitation. At least one-half of the students will waste more of their allotted time, and that means at a very conservative estimate a loss of twenty-five per cent. of the hour assigned. The recitation plan *per se* I am radically opposed to, while I am as strongly in favor of the quiz.

*Technic Methods.* It needs no argument with this association to confirm the importance of technics, but we are not a unit as to what, how, and how much should be taught in this course. To answer the question, What should be taught in technics? I would say, Every operation and mechanical process should be performed technically. How? is a long subject by itself, and we simply pass it over. How much? we will answer by considering time; that is, as much time should be used to cover all kinds of technic work as is used for practical work. The ratio between each technic course and the corresponding practical work would not be the same, but the totals would be.

I have made two subdivisions of technic teaching: "Class as a whole," and "Class in sections." The prevailing system has been to teach the class as a whole, no matter how many it may contain. This has proved a difficult problem, because some are so much more expeditious and successful in whatever they undertake that it works a hardship to keep a pace commensurate with the slowly plodding ones. I believe that the time will come when the large classes will be for certain purposes divided into sections of six, eight, or ten.

*Practical Work.* Perfection in this department is in one sense the aim sought by the other methods, and can justly be considered the last step in making the finished operator. We do not desire to graduate a man with educated, refined instincts, and poor manipulative ability; nor do we wish to place the seal of commendation upon the man who is a finished mechanic and is intellectually and morally below par. Of the two I believe that the patient had better intrust himself to the care of the gentleman.

Thus far all we have said is general, and is as applicable to one department as another. In my practical application of these ideas

I divide the subject into plate-work and crown- and bridge-work. I teach them in the order named, arranging so that the didactic instruction in plate-work will be completed the first year, and crown- and bridge-work the second year. The technic work is nearly the same. The crown technic is finished the first year, beginning the bridge-work the second year. All technic work is to be finished about the middle of the second year, when the entire time from 9.30 in the morning until noon is devoted to practical work, in plate, crown and bridge, and orthodontia, for the remaining year and a half.

In technics, verbal instruction is confined to very short talks telling the class what to do and how to do it. This instruction is also written upon the blackboard in as concise terms as possible. The desire is so far as possible to have the student become familiar with the technic of a given subject before it is considered in the lecture-room. By this means the student knows what we are talking about and the lecture is of vital interest, because it explains why he did so and so, also why he met with certain difficulties and how he can overcome them. The student having some knowledge of one method, it is much easier to present other methods and make them intelligible to his mind. It is a most important factor in didactic teaching to so drill the student that he may hear an operation or process described and be able to put the ideas into practice. This mental grasp is to my mind the chief difference between the school- and the office-educated young man. To illustrate, we will consider the subject of impression-taking. This is the first technic work the student is given to do. After he has spent a few days in taking impressions and making plaster casts, his mind is in a receptive condition to grasp all we have to say upon impression materials and methods. In fact, he is quite sensitive upon the subject. It should always be borne in mind that the large proportion of our students are not accustomed to lectures. We give a definition for an impression, as, "A negative likeness of an object or a part to be reproduced in form." It is not sufficient that a definition shall be repeated two or three times, but it must be analyzed: "An *impression* is a negative, not positive; the object is to produce the positive and have a perfect reproduction in form, or a *cast*."

Another very important thing at this time is to teach the student how to take notes. Without this instruction the probability is that the student will never read what he has taken, and would not understand it if he did, because the notes would be fragmentary. I instruct the student to draw a perpendicular line about one inch from the left side of the sheet. I then instruct him to write all subjects on the left of the line,—in a word, if possible,—the subdivision and short notes on the right.

In the first two or three lectures I write out the notes upon the blackboard as I am lecturing. Then for a few lectures I mention the subjects, divisions, and subdivisions,—when I feel that all who are interested in taking notes have established a method. To illus-



trate: The subject, "Impression," is written upon the left of the line; then opposite, at the right of the line, is written the word *Defined*. As this definition is not found in the text-book I request the students to write it out. The one word reminds the student that a definition was given, and if he does not remember it and it is not written out he must look it up in his text-book. Upon the left write, "Materials." Opposite, First and Second. *First*. Materials softened by heat; and *Second*, those made into paste with water and hardened by crystallization. (Name materials after each.) Then each material is treated as a subject, as, Wax,—treated under the subdivisions: How obtained, chemical symbol, solvents, melting-point, adulterants, how made into sheets, how removed from cloth, how worked; and so on through the list. The result will be that the student will have the teacher's notes, with almost no time consumed; he has not lost the connection; can at any time review the lecture, and it creates a demand for his text-book.

Another feature to be considered is the keeping of attendance. I am using this method and like it the best of any with which I am acquainted: At the close of the lecture I pass slips of paper about three by four inches in size; I give several to the man at the end of each row of seats; he takes one and passes the rest to the next man. I then ask for a short classification, definition, or the spelling of a technical term, which they write, sign their name, and hand in as they pass out. This requires but a moment of the class time and is an index to the comprehension of the student as well as a record of attendance. The name is afterward checked off in a book.

The subject of quizzing requires careful consideration. I believe that it should be used as a method of teaching and not as a form of examination. I give two lectures a week prior to the holidays, and one lecture and one quiz per week after New Year's. I may at any time during a lecture ask a question, but this is designed to fix the attention upon the point under discussion. My reason for not introducing the quiz earlier is that the class may have covered all of plaster, vulcanite, and some of metal plate-work, so that the student has some knowledge of the general subject of prosthesis; then the quiz becomes a review, and the student associates ideas which he did not do on first going over the subject. At the beginning of the term the student's mind is so engrossed with histology, osteology, and chemistry that it is wrong to require a preparation for a quiz upon this subject. The various subjects are taken up and quizzed upon in the order in which they were lectured upon, hence the student knows what to prepare.

Formerly my whole object in quizzing was to teach, and the students, knowing that it made no difference with their percentage, would sometimes take advantage of the method. I have known a few men who would persistently respond, "I don't know." I noticed that these men were very assiduous in writing down the question and perhaps a short answer. I have this year announced

that a record will be kept and for "poor" to "very poor" recitation five to fifteen per cent. will be deducted from their final examination.

It is my opinion that the technic, didactic, and practical teaching should be entirely in the hands of one man; the technic and practical work may be in the hands of assistants, but they must be in entire sympathy with the professor, they should be men that have been educated to the work under him, so that no conflicting methods will be introduced.

By these means we will have harmony, and "In union there is strength."

---

## THE TEACHING OF BACTERIOLOGY.

BY W. R. BLUE, M.D., D.D.S., LOUISVILLE, KY.

(Read at the annual meeting of the Institute of Dental Pedagogics, at Pittsburg, Pa., December 31, 1901.)

THE addition of bacteriology to the dental curriculum did not cause delight to the prospective D.D.S., and the teaching of him and her is no easy task. I do think, though, that in a short time the dental student will manifest as much interest in this branch as does the medical. I was much gratified, at the end of my course this term, to hear a number of my pupils say that they were sorry the course was over, as they were beginning to be interested in the subject. But all good things must have an ending!

To teach any subject successfully requires, first, the necessary equipment,—which I have, thanks to the directors of my college. Second, the attention of the student. This can always be gained by plainness of talk and demonstrations. Blackboard demonstrations in connection with the work at hand make the course all the more interesting to the student. Third, in bacteriology one must have pure cultures, good microscopes, good objectives, good stains, and last but not least, good light. Cut-and-dried specimens should not be used in demonstrating, except as a control of the bacteria under consideration.

After explaining the work in view in a general way to the student my first lecture covers cleanliness, the use of high-power objectives, condensers, light, preparation of cover-slips and slides to render them sterile, and the articles required of each student in the laboratory, such as stains, needles, labels, Bunsen burners, etc. After this the course is about as follows:

I. *Definition of Bacteria.* History of bacteria, touching on their minuteness and giving measurements in micro-millimeters.

*Grouping.* They are classified by their shape, *i. e.* globular, cocci, rod-shaped bacilli, curved or spiral spirilla.

*General Morphology.* Here we describe the structure of the bacterial cell. Bacteria are examined under the microscope in their natural state and stained to bring out their protoplasm and envelope.

II. *Reproduction*. Now is explained the rapidity of reproduction under favorable surroundings. Board demonstration of the method of reproduction is done, also degenerative changes, such as involution, explained.

*Spore-Formation*. Board and microscopic demonstrations of this method are given, *Bacillus tetani* and *Bac. anthracis*, properly stained, being used.

III. *Motility*. Movements of bacteria are studied by use of hanging drops. Here flagella are explained and the part they take in producing movement in bacteria. No attempt is made to stain flagella in the course, as the time required to find them by every student in the class would carry us far beyond the time allotted to the course.

*General Biology of Bacteria*. Under this heading we speak of the growth of bacteria, calling special attention to the prime factors which must be considered in their growth: (1) Food supply. (2) Moisture. (3) Relation to gaseous environment. (4) Temperature. (5) Effect of light.

IV. *Death of Bacteria*. This is demonstrated by transferring dead bacteria to fresh media and their failure to grow. The subject of germicides, sterilization, and the part these play in killing bacteria, is touched upon here. Sterilizers of various kinds are shown the class.

V. *Preparation of Culture Media*. Under this heading the making of different culture media is explained. Culture tubes are shown in the sloped, upright, and deep form,—the last for cultivating anaerobic bacteria. Platinum needles, for inoculating tubes, are passed to class and their use explained. Also methods of separating aerobic bacteria by use of Petri dishes and Esmarch tubes.

VI. *Incubation of Cultures*. Incubator with gas-regulator and burner brought before the class and explained.

VII. *Non-Pathogenic Bacteria and Pathogenic Bacteria*. (A) Non-pathogenic Bacteria: The higher bacteria are placed under this heading, *Leptothrix racemosa* and *Penicillium glaucum* being used in hanging drops and stained for demonstration. (B) Pathogenic Bacteria: Before taking up the study of pathogenic bacteria, the student's attention is called to the importance of destroying all infectious articles either by heat or chemicals. No food is to be eaten in the laboratory. Smoking is prohibited. No label is to be licked by the tongue. When fluid containing bacteria is spilt on the benches or floor 1:1000 mercuric chlorid is at once poured over the spot. Barring the *Bacillus coli communis*, only mouth-bacteria are dealt with in the course. All the varieties of pus-producing organisms are first shown and the part they play in suppurative conditions explained. These are followed with the thrush fungus (*Oidium albicans*), diphtheria bacillus, tubercle bacillus, and actinomyces. Then come the bacteria that cause dental caries: (1) The acid-producers of superficial layers, *i. e.* *Streptococcus brevis*, *Micrococcus albus*, *aureus*, *citreus*, *Spirillum sputigenum* and *Bacillus maximus buccalis*.



(2) Of deeper layers, *i. e.* *Staphylococcus brevis* and *Bac. necrodentalis* (Goadby). The liquefying bacteria of dental caries are next shown, *i. e.* *Bac. mesentericus fuscus* and *Bac. fervus* (Goadby) and yellow bacillus of Goadby. Only one bacillus that produces discoloration in caries is shown, *i. e.* *Bac. mesentericus ruber*.

VIII. *Microscopic Examination of Bacteria.* The two methods used are by hanging drop and film preparation; the first I have already referred to. Film preparation, dry method: This is the most common method of microscopically examining bacteria. The student is given a drop of sterilized, distilled water on cover-slip from platinum loop. Immediately afterward the bacteria to be studied are added to the water and stirred. Student evaporates the moisture and passes the cover-slip through the flame of the Bunsen burner three times to fix the film. Then the stain for the bacteria under consideration is announced, with full direction for its use. When practicable, each student is given specimen to examine suspected of containing bacteria he is studying in pure culture. (I make use here of pus from alveolar abscesses, sputum from suspected cases of tuberculosis and thrush.)

IX. *Inoculation of Animals.* When time permits, animals are inoculated with some of the virulent cultures in stock. After death, post-mortems are held and pathological changes in different organs are made note of. Blood is examined for bacteria.

X. *Immunity and Susceptibility.* These subjects are treated at some length. Under this heading toxins and antitoxins are explained.

The last week of the course is devoted to the inoculation of culture tubes by each student, from particles obtained from the mouth. These tubes are labeled and incubated. Cultures are examined at the end of the third day by hanging drop and film method. Pure cultures, previously stained, are used as controls.

At the end of the course a general review occurs, when the micro-projector is used for the larger bacteria and lantern slides for the smaller.

---

## PROCEEDINGS OF SOCIETIES.

---

### NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

(Continued from page 605.)

#### SECOND DAY—*Evening Session.*

The meeting was called to order at 8.30 by the president.

A paper was read by Dr. R. C. YOUNG, Anniston, Ala., on "Asepsis."\*

#### *Discussion.*

Dr. G. V. I. BROWN, Milwaukee. I am heartily interested in this paper. In the first place, there is brought up the question that is

---

\*Printed in full at p. 686 of the current issue.

now the all-absorbing question in regard to bacteria. We had reached the point at which we thought we knew all about them. Bacteriologists were ready to say that certain germs would be recognized under the microscope under certain conditions; that they always had the same effect, and produced the same results. It looked as though it would be an exact science, but I think we all agree now that we do not know half as much about them as we thought we did. For instance, we do not see how it is that injections of antitoxin from diphtheria,—or from the Klebs-Loeffler bacillus,—have a very marked inhibitory action in diphtheria.

The other evening I was at a meeting where a paper was read, and the author of the paper had the idea that all germs were one and the same; that conditions surrounding them determined whether bacteria would assume a virulent character or not; that the condition of the individual circumstances made a germ that we would recognize as one or another. Of course, this is an extreme view, but it gives the tendency of the study of the present day. The best statements we have upon this subject show great revolution in the ideas we have had with regard to germs. It only accentuates the opinion with regard to cleanliness. It simply seems to make it more incumbent upon us that we be cleanly. The suggestions are of great value to me. It is one thing to know how to be clean; another to try to be clean, and still another to be able to be clean. The essayist makes plain how to be clean, and shows very clearly that it will help us in all our operations.

Dr. J. P. CORLEY, Greensboro, Ala. I much enjoyed the paper. As you know, the essays we have been having on this subject have tended to the extreme. I think in many instances they have accomplished more harm than good; for instance, the extreme position that, after any operation on any patient, automatic pluggers should be sterilized. I am indebted to Dr. Young for some ideas given me some years ago in opening devitalized teeth, and have followed them with a great deal of success. The study of asepsis is like a work of romance; the more we study it, the more it grows on us. From the results obtained by the advancement of this theory we think we are on the right line. We attach too little importance to the immunizing effect of bacteria. We got our knowledge of antitoxins from that source. In alveolar abscess we have a limited infection because the attenuated toxins render the tissues immune. Some operators are over-careful in observing aseptic precautions, but fail to keep the chain unbroken. They sterilize their instruments, but place them on a bracket that gets, at best, only the care of a whisk broom. They render of no effect what they have done! If we undertake to observe absolute asepsis, we will do nothing else than sterilize. It is important that we get down to a practical working basis.

When I dismiss a patient my instruments are carried to the lavatory and washed in a stream of running warm water, with a stiff plate-brush charged with soap. I scour them thoroughly, and can very readily remove all organic material. The essayist takes an extreme position on the other side; we do not put broaches

loaded down with virulent matter into the mouth. I have been in the essayist's office, and have seen his sterilizer. It is a good thing. It is well for us to study this question, but don't let us take an extreme position and waste half our life in fruitless labor.

Dr. J. HALL MOORE, Richmond, Va. One suggestion I would like to make: For years I have had my bracket covered, and where convenient, the drawers of my cabinet lined with glass instead of felt. This makes conditions more aseptic.

My principal antiseptic is carbolic acid. It is a good sterilizing medicament for instruments. Carbolic acid in solution with soda is a very good sterilizing agent. The soda prevents rust, and the carbolic acid sterilizes. Forceps and all steel instruments should be boiled in the soda-carbolic solution.

Dr. J. P. GRAY, Nashville, Tenn. I do not care to be classed as being opposed to cleanliness, but it does seem that we carry this too far. We can only take it by comparison: Twenty-five years ago they knew nothing of bacteria, and if it had been the case that every time an instrument was used that was not thoroughly sterilized it had poisoned the patient, the population would have all been gone by this time; none would have been left for the dentist to work upon.

Dr. B. HOLLY SMITH, Baltimore. I think every dentist should study this question more, and dentists should endeavor to so comport themselves in their practice that they shall have at least the respect of the people among whom they practice. We know that it is not a trifling matter in the eyes of our patients. There is too much constant study in this line of asepticism for us to treat it lightly. I claim that the dentists I have known have been clean men. We should make every effort to have our instruments sterilized, keep our hands clean, and protect ourselves from any accusation of uncleanness. I think it is useless from our knowledge of bacteria to say anything about the means of sanitation. The methods are too well known in our profession to go into particulars.

Dr. J. R. BEACH, Clarksville, Tenn. I believe in the sterilization of dental instruments, and think we cannot be too careful in the manner in which they are sterilized. Heat can be relied upon as the best germ-destroyer, though it is good practice, in some cases, to immerse the points of the instruments in some good germicide before immediate use. Especially let us be careful in sterilizing instruments used in the treatment of abscesses; forceps, hypodermic syringe, lancets, etc., thereby running no risk of inoculating the tissues with an infectious disease.

If the essayist is an extremist, though I do not think he is, it is far better to be on that side of this important question than on the apathetic side.

Dr. W. MITCHELL, London, Eng. I came in rather late, just as the paper was closing, but presume it was in connection with the sterilization of instruments. I heartily agree with what has been said by those who preceded me, in regard to the necessity of this important branch,—important in that it aids us to do our work right. We must protect our patients from the ravages of bacteria.



We are all convinced of the importance of bacteria, as impressed by the colleges. I can only recommend it to the students, and would impress upon them the necessity of carrying the process of sterilization as they find best according to their requirements, and thereby carry along this work. It is undoubtedly on the right line.

One fact presents itself to my mind; that is, that it belongs to the English-speaking races to be the greatest sterilizers on the face of the earth. Civilization is nothing more than physical and moral sterilization.

We should wash our hands as we go through our operations. It helps us in our operations—makes them more aseptic, and also makes a good impression upon our patients. I think it very necessary to perfectly sterilize all instruments before their being used in the mouth.

Dr. YOUNG (closing the discussion). I have nothing more to say except to deny the accusation that I am an extremist. The one thing that impressed the necessity of asepsis upon me was a case of blood-poisoning that I had myself. I treated an abscess, and happened to have a small abrasion on one of my fingers. After finishing the case and washing my hands I was evidently infected. That night I suffered intensely with pain, and within the next twenty-four hours large red lines appeared on my arms, accompanied by considerable swelling. It was a plain case of blood-poisoning, and I am confident that quick treatment and a good constitution saved me.

I keep my sterilizer by my side at all times, and drop my instruments into it after using them instead of putting them back into my case. I thank the gentlemen very much for the discussion of the paper.

The Committee on Education, Nomenclature, Literature, Voluntary and Special Essays, being called,

Dr. B. HOLLY SMITH, of Baltimore, Md., chairman, made the following report:

#### REPORT OF COMMITTEE ON DENTAL EDUCATION.

As chairman of your committee on Dental Education, it is thought well to review briefly the present status of the subject, in order that suggestions which may be made for improvement may come in proper sequence to favor successful action.

To do this it is impossible to close our eyes to marvelous changes wrought in methods and theories of training since 1885, when the National Association of Dental Faculties was organized at the suggestion of the late Dr. R. B. Winder, of Baltimore.

At that time the dental student who poorly substantiated a claim to five years' pupillage or practice was graduated in one session of five months, and otherwise was permitted to apply for final examination after two years of five months each. The work of that association of teachers has gradually brought the course of instruction from this point to two years of six months; to three years of six months, then three years of seven months, and finally, this year, to four years of seven months. It has gradually (some have thought too rapidly) brought our teaching institutions opportunity for not only more extended laboratory and infirmary training, but has widened the field of instruction generally, taking into the

curriculum many collateral and associated branches, tending to make the dentist of to-day's production not only better informed but a better trained man than his brother of 1885.

It must not be said that George Washington's "cherry-tree" acknowledgment of "I did it with my little hatchet" is altogether appropriate as a claim for this association. All the time the widest publicity has been given to its proceedings. Comment both unsought and solicited has been offered in the dental press and at dental meetings. Star-Chamber proceedings have not prevailed, but in every move the dental profession itself has seemed to be acting; the impatient ones have been held in check, and upon the whole we may say that the wisest counsel has prevailed.

Not the least important of the services rendered to the profession at large by the N. A. D. F. has been the drawing into the interest and discussion of its movements such a large number of men who are not teachers, but who have given much thought and study to the improvement of the curriculum and extension of the course of study. Because of this free discussion and agitation there has arisen in this country we might say an aristocracy of learning in the domain of dental education,—embracing, it is true, many purely theorists, many impractical and speculative formulæ, not a few wild and chimerical schemes, but nevertheless tending to widen and diversify knowledge of the subject. Dental education is one of the regularly assigned subjects for discussion in all well-regulated dental societies, and perhaps no other elicits such ready and varied comment; indeed, we are almost willing to say that if there lives a dentist, a member of a dental association or not, who is not prepared to discuss the subject of dental education, he is fit for "treason, stratagems, and spoils." The average man will not only discuss the subject, but has new and original ideas concerning it. These he offers free, without money and without price. Even these effusions do good, enabling those of wider experience and more practice to get the poetic or romantic, or, not less important, the absurd side of the question. I challenge any man, therefore, to say that this subject has not been discussed, or that upon many points there is not generally prevailing a unanimity of opinion.

Not the least uniformly do we believe both as teachers and practitioners that the training of the dentist is a special work to be done by practical dentists. We have not, I hope, extended the course of study that men preparing to practice dentistry may dawdle along through the ornamental paths of extra-medicine. The danger seems to be just there,—that the purpose of the student may become confused by the demand that he select his essentials from medical work which he is compelled to take along with the medical student, and which more often is prepared for the latter rather than for him. To make myself plainer, I do not believe in the economical arrangement of training dental students in medical classes. The anatomy, physiology, materia medica, pathology, therapeutics, surgery, and all laboratory and infirmary work should be prepared for the dental student, and with a view to fit him to practice dentistry, and not to fit him to rub shoulders with his medical brothers.

A knowledge of anatomy is desirable, but the more particular niceties of this study should be insisted upon from a dental standpoint. If done from the standpoint of the general surgeon, it is at the expense of other essentials of dentistry.

The same may be said for the other studies above mentioned. No one will, in this day of enlightenment, deny that dentistry is a part of the healing art; indeed, it is perhaps the most helpful and certainly the most hopeful of success in its undertaken field, but all the more the training of its votaries must be a special training. Too much time has been given to the subject to allow compromises in its doing. It cannot be denied that there have arisen in our midst a considerable number of dentists ultra-medically inclined, decrying the strictly dental position and courting medical association only.

A classmate of your essayist who at his graduation matriculated at a medical university, and after two years graduated in medicine, said a few

days ago, as many erring must say, "If I had only spent that time under the pupilage of teachers specially qualified to fit me for the practice of dentistry, how much better it would have been for me and my patients! I have had perhaps one case which my medical knowledge would fit me to treat, to one hundred where my postgraduate course in dentistry would have made me accomplished." Dentistry is a wide field and I do not contend that there are not advantages to be gained by those who are medically educated dentists and feel their fitness to do special surgical work, and perhaps this training can best be obtained in the surgical clinic of a medical school. But can we as dentists all afford to neglect the field of work which opens to us everywhere, for those unusual opportunities of service which are grudgingly given and not often secured without collusion or superior fitness,—a fitness acquired by special training and natural adaptability.

What man among us has not felt a commiseration and contempt for the medical man who has assumed knowledge (few do more than assume) of dentistry? I would like to ask you,—this company,—if you have ever received one helpful comment, one aid to practice from a general practitioner. I do not ask from a spirit of antagonism; I am a graduate of medicine, a licensed practitioner in my state, a special lecturer in a medical college, but I am and only claim to be a *dentist*, and however often I am called into consultation (and I would be glad for the patient's sake if it were oftener) it is for my special, my dental knowledge.

Amalgamation, generalization, is not, as it seems to be in the business world, the keynote of progress in the science and art of healing.

Is any man ashamed that he is a dentist? Let not his shame confuse his conscientious performance of his strictly dental duties to his patients; but if it *does*, then rather let *him* be ashamed that he is not a man, let us be ashamed that he was ever called a dentist. Not failure, but low aim, is crime!

High aim is not personal preferment or local distinction, but to be and do the very thing we claim to be and do as it can best be done. Aspirations for medical recognition and associations cannot do for us what we can do if we will perfect ourselves in our special practice; no badge of inferiority need be worn.

Your chairman could not close his report without restating what he has written and spoken in a different capacity, viz, a plan for the preliminary training of the dentist.

It rests with us, the mature thinkers, the teachers, the protectors, the fathers, the sponsors of dentistry to say what shall be the training of the candidate for dental study.

The general educator, the medical man (whether he be dentist or not) has said that in order to enter his pupilage for a liberal profession, he must have so many counts in Latin? Do you consider this sufficient? You know the boys that have made the best dentists. Was there not something in special aptness or training? Will you not say that a student should come to the study of dentistry with a fair knowledge of mechanics?

It is manifestly impossible for a boy to receive any stimulation to the cultivation of mechanical ability in the average preparatory school of today, during the years when motor development is best accomplished. This association, representing as it does in this branch and the central body the dental profession of America, stands sponsor to the race for the proper qualification of those who aspire to the practice of our specialty. The members of this association, though scattered over a broad expanse of territory, are in their communities influential, and if they will but agree in this council and at the homes of its members on the following propositions, they will render a great service not only to the embryo dentist, but to their several communities:

First: That it is essential that opportunity shall be given for the motor training of youth.

Second: That this motor training shall be so associated with academic training both in preparatory and collegiate work that students electing this course shall be at no disadvantage in obtaining their academic degree.



This training is essential to those who enter any pursuit where mechanics are involved, and not without use to any well-rounded human being.

Let us urge the introduction of manual training into our preparatory schools, selection being open to those who propose to pursue some calling requiring mechanical ability.

### *Discussion.*

Dr. WMS. S. DONNALLY, Richmond, Va. While I am very much interested in this subject, I have sometimes felt that this problem of dental education would not be solved in my day. I have changed my mind, however, in the last year or so. From recent discussions of this subject I am inclined to think that the natural tendency of the dental profession is inevitably toward specializing, and when I hear such a paper from such a leader as Dr. Smith, my heart is rejoiced indeed that this question is to be settled by men who are ready to take hold of it and determine it for the benefit of the profession. I do not think that I should go into the merits of the case, and give my views; never having done anything in the teaching line, I prefer to leave it to those who, like Dr. Smith, can speak from personal knowledge. I feel sure there are many to-day so doubtful of their position, and so doubtful of the position of the profession, that they long for medical recognition. I feel sorry for the man who has no part in the solution of the problem of the independence of the dental profession.

Dr. S. W. FOSTER, Atlanta. I enjoyed the reading of this paper. I agree with Dr. Smith in most of his suggestions, but I must differ to a certain extent from some of his expressions. I believe that the tendency is too much toward specializing the dental profession; too much toward specializing it from the standpoint of technique. I appreciate the reasons why we are having these papers tending along this line. We are reminded that we are not recognized in European countries. We know they do not recognize the dental degree in their schools, but make it subject to their medical degree; hence, they teach theory at the expense of technics. The International Dental Federation in Europe has brought about an influence largely changing the sentiment toward technic study as it pertains to dentistry. We are to have a meeting in Stockholm, where the American schools are to impress the importance of specializing dentistry; but let us not, in zeal, go to the extreme. I do not think that our education should be wholly theoretical, but I do think our position is dangerous when we try to specialize too much toward technique. I recognize the fact that we must have technique, but I believe many schools are devoting too much time to preparatory technique, at the sacrifice of investigation of the fundamental studies, chemistry, anatomy, and physiology, which underlie all medical science.

I refer you to the lecture of Dr. Brophy last night. A man could not do that who is only specialized in dental technique. We must have that learning of the fundamental principles of medicine that will enable us to build up our profession. We cannot afford to eliminate this and put in too much technique. We must have chemistry, anatomy, and physiology. The tendency toward tech-

nique would lead the casual observer to think that a mechanic is all that is necessary to be an up-to-date dentist. I agree with you that it is best for the dental classes to be separated from the medical classes. I believe in sufficient technique to make expert operative dentists, but many do not get the underlying principles of our great profession.

Dr. J. P. GRAY, Nashville. I want to thank my friend for the paper, but, like Dr. Foster, I cannot agree with him in all of his expressions, and for fear some of the young men present might misunderstand the paper, I would call attention to the mechanical part of his address. I am sure he did not mean it in the terms he expressed. I believe there should be a thorough teaching of the fundamental principles underlying dentistry,—chemistry, anatomy, and physiology. It is impossible for us to separate them. We could not teach anatomy perfectly by simply teaching the anatomy of the head, neck, and throat. We cannot teach physiology properly by confining ourselves to the study of the teeth. Unless we study the principles of physiology, we are lost when it comes to the teeth. I believe the colleges are awakening to the fact that it is important to give this thorough course in the underlying principles, before allowing the student to operate upon the patient. It is best that they be given the proper instruction in this line before allowing them to do operative work, and, if we stress too much the point of technique, I think it is on the wrong line. Our surgeons certainly would not teach practical surgery before teaching the principles, and I believe that it is best that we begin to teach the principles of chemistry, anatomy, and physiology before the practical branches.

Dr. G. V. I. BROWN, Milwaukee. I wonder if all present appreciate fully the value of that paper. No one could have written such a paper who had not given the subject a great deal of thought, but I disagree with the essayist in some of his ideas. The paper is the product of too careful study of facts for us to undertake to argue against the paper,—in this we all agree. The situation is just as he describes it, but I do not think the facts necessarily bear out the conclusion. It seems to me that we should take into consideration the fact that, when the Creator made man, he made him all in one, and therefore it seems useless for us to assert that dentistry is a branch of the healing art. The fact is, we are not a branch of that art, and for us to attempt to define the line of demarkation between what we know and what the general practitioner should know, is difficult; the line is far from being clear. There is a certain amount of knowledge of the teeth necessary to the medical profession, but how is the medical man to know about these matters, if we do not teach him? How can we teach him unless he recognizes us as his equals in education? It seems to me that this has been the turn in the discussion of every paper before this body. The medical men do not understand these things as we do, therefore patients come to grief in excellent hands. We should invite him into the office to see us perform operations, teach him what the dentist does, and impress upon him the importance of leaving strictly dental operations to the dentist.



We should have sufficient technique to make us expert operators, but because this is true I fail to see why it is a disadvantage for us to have the proper medical education,—especially when it holds out such an inducement as placing us on a plane of equality with the man with whom we propose to associate in the medical profession. Give the student as much education as you please in technique, but give him the proper idea of medical subjects.

Now, the danger lies here: Where our institutions are associated, there are not many instances where the power of management is not in the hands of the medical men, and the dental student does not receive the proper consideration. He simply helps out the medical department. Let us impress upon the medical men the importance of this question, and endeavor to get the institutions to give the dental student that education which he should have. If this cannot be done, let us divide ourselves. I believe, however, this can be done the other way.

Referring to my own personal experience: I attended a college where the medical and dental courses were given together. The dental students began their technic work immediately along with their other medical studies, and continued until their medical course was finished. The idea of dentistry was paramount. We were not of the idea that dentistry was a profession we were to be ashamed of. It is not possible to make one branch greater than another. The man who has a medical degree, but who prefers to practice dentistry, is a great deal above the general practitioner. If there is any difference, it is in our favor. If we do not claim it, it is our own fault. We must educate the theoretical dentist to be fully equal to the medical man.

In the American Medical Association it is a fact that the section on Stomatology has the same courtesy as every other section. In the entire body less than one hundred men will control the work of the association; they will transact all the business, etc. There are about 3000 or more members. They have a few from the dental section, as from other sections. Where we make our mistake is, that we do not claim what we are entitled to. If we would, they would give us all we were entitled to.

I would say, give equal power to the dental branches in these medical schools. Let it be understood that the dental department is to have all that is coming to it; that the dentist is a privileged individual in their institution, and that the dental student is to get such course as he should have, and not be made subservient to any other course.

Dr. YOUNG. This is a very serious subject with me. I feel myself the lack of the proper education on the fundamental principles of medicine. There is no occupation you can follow that can compare with the dentist. He must be an artist, surgeon, and mechanic. If I had a boy to educate to be a dentist, I would give him, first, his literary education, next, send him through the medical college, and then qualify him to be a dentist. If we call ourselves scientific medical men, we must be educated on the fundamental principles of medicine, at least. The ordinary blacksmith



has that dexterity which will enable him to manipulate technic work. If we are to call ourselves simple mechanics, this is all that would be necessary.

Dr. H. W. MORGAN, Nashville. I do not know much about dental education. Some years ago a gentleman undertook to make a dentist of me. He followed the course indicated by Dr. Young. After passing on my case, it was decided that I was entitled to the degree of D.D.S. I told him he had made a mistake, that my education had begun at the wrong end. I want to beg every man, who has a son to be educated for the practice of dentistry, not to send him to a medical college first. The remarks made in discussing this subject are contrary to what I know. The medical men do not know anything about dental subjects, and they cannot teach them properly. Wherever the two are educated together, the dental branches are made subservient to the medical. A boy goes out with the degree of D.D.S. and he soon finds that what he has gotten out of the medical branches will do him little or no good. I appeal to those here who have taken both courses, and there is not a man who will hold that the medical branches do anything more than develop a theoretical instead of a practical dentist. Dr. Brown said that this paper was the result of years of thought upon the subject, and I think Dr. Smith has given us the best his brain could afford, and I indorse *in toto* everything he has said, and believe the course he has outlined is as near the proper course as it is possible to get. The lengthening of the course tends to do two things; one is to force the student to cut short his literary education, and the other is to cut down the number of graduates we get. How many of the students in the dental colleges to-day have an A.B. degree? About one out of every hundred. Lengthening the course, and increasing their age; if they go through with the A.B. degree, getting to the age at which their manual dexterity cannot be developed; and I believe Dr. Mitchell will bear me out that this is the state of affairs on the other side of the water. By the time they have passed through the gymnasium, and passed into the dental laboratories, they have reached the period where they cannot hope to develop that manual dexterity that is essential to success as dentists.

Dr. B. H. TEAGUE, Aiken, S. C. I do not like to take up the time of the association, but there are many young men here who are going to be confused by this discussion. I have practiced dentistry for thirty years, and certainly have some experience. I attended a medical college for a short while before taking up the study of dentistry, and all through these thirty years this knowledge of medicine has done me a great deal of good. I give you experience, not theory. For many years after graduating in dentistry I recognized that it would have been a greater help to me had I taken the full course in medicine, and become a graduate. How many students graduate from dental colleges who are fully versed in nosology? My experience teaches me that it is best that we should have a thorough knowledge of the fundamental principles of medicine as well as the technique of dentistry. I believe it is best for a man to take a full course in medicine with dentistry to

enable him to practice properly, and to make him an equal with his medical brother. It makes very little difference which one he takes first, but, to my mind, it is necessary for the dentist to be a medical man.

Dr. YOUNG. Dr. Smith, is it not a fact that the leaders of the dental profession are medically educated? I feel the lack of it myself, and I do not want others to be handicapped in the same way.

Dr. MORGAN. I will answer Dr. Young's question. The leaders of the profession are those that have never been inside of a medical institution. We talk about being equal to the medical man; I want to say that that man does not live, who does not practice medicine, who is the equal of the medical man. We could be equal, if we would study after leaving school as the medical men do; but how many dentists keep up their study after leaving school?

Dr. W. H. WEAVER, Lagrange, Ga. I have listened with very much interest to the remarks made. I have read, in the last five or six years, many discussions of this subject in the journals. I took it upon myself some time ago to write to the journals with regard to how many dentists read the journals. I have some figures that I am not at liberty to give, but I am safe in saying that there is not one dentist in twenty who reads one hour in twenty days. Let the medical man do the same thing, and God pity his patients! Leave off the study of your profession and you must die, professionally. Those who are here study the profession. That is why you are here. But this is not true of the profession generally. Not over one-fourth of the dentists of the country attend society meetings, and I say this does not represent the profession generally. There is about one in ten who subscribes for a dental journal. You can boast about American dentists, and we have some able men, the peers of any men on the face of the earth, but they do not represent the profession. If you wish to improve the dental profession, get the men of the profession to study. As a rule, the dentist's education stops as soon as he completes his college course and gets his diploma.

I am in favor of dentistry standing alone. I believe in its not being connected with medicine any further than this, that when a man makes up his mind to study dentistry, let him make up his mind to be a hard student! Let him associate with the medical men, get ideas from them, study medical works that will help him along in his profession. All I know of the medical men, who are dentists, is that they have the M.D. degree. Teach the dentist to study, and study all the time, and this question is solved, and solved eternally. Those men who discuss this question are all educated men. The question is, how to educate the profession in general. There is inspiration in seeing men work for the education of the profession as a whole, and it inspires the individual to higher things.

Dr. W. MITCHELL, London. I have listened with a great deal of interest to this paper. I most heartily indorse all my friend Dr. Smith has said. I met two gentlemen last summer that represent the leading element of the profession on both sides of the Atlantic,

Dr. Brophy and Dr. Godon, and if Dr. Smith had been with me and heard their views he could not have expressed them better.

What is the cause of this meeting of dentists? Go to the medical convention; how many dentists are there? How many medical men are here? The question has been asked, "Is it possible for a man to be a leader in the dental profession, and not be a medical man?" The answer is, "Yes." There are a great many men who are worthy of the name of dentists,—some of the old school,—that never had the opportunity of a medical education, that are the leaders of the profession to-day. It only comes by practice. It would be necessary, of course, to have a medical education to a certain extent, to enable a man to become an anesthetist, but he does not necessarily need a full knowledge of medicine. The knowledge of the dental studies is more essential than the medical studies. In specializing, we could consider the fundamental principles of medicine, but we need not go into them to the extent that the medical man does. Take, for instance, the two branches of chemistry; we do not need as much organic chemistry as the medical man. We could simply touch upon those parts that are essential to dentistry, if we were to specialize dentistry. How many of the combination colleges pay any attention to the branches that are more essential to dentistry than medicine? There are many things necessary for medicine that are not necessary for dentistry.

It takes from five to seven years to complete the medical course. After completing the A.M. degree, taking up the medical course, then for a man to take up the study of dentistry carries him beyond that age where finger manipulation can be developed to the extent needed in the operations he is called upon to perform; this manual dexterity must be taught in youth, instead of waiting until the men are too old to learn it. It is necessary that the dentist should be well grounded in the exact sciences. Let us have chemistry, physiology, and anatomy, and those exact sciences that are necessary to the dentist. Let us have the fundamental principles well grounded, but let us have them along with the study of technical dentistry. Brophy, Ford, and Garretson all became better surgeons from being dentists. It is the idea in Europe that a medical education is not essential to the study of dentistry. We must listen to the leaders of our profession, Dr. Smith and others, who have degrees in both branches and have had considerable experience in teaching. We must respect the experience of these men. The results, as seen by them, are presented in the paper read here to-night. They see the uselessness of both medical and dental education in order to practice dentistry, and papers such as Dr. Smith has just read are the product of their reflections and experiences along these lines.

Dr. B. HOLLY SMITH, Baltimore. It seems almost inconceivable that Dr. Foster should have made the statement that I claimed that a man did not need a medical education in order to be a dentist, but in order to be a dentist must be purely a mechanic. I claimed nothing of the kind; it was simply this, that the dental education could not be too broad. I would like to see every dentist educated



in medicine, literature, and theology, but would like to see their education carried out from a dental standpoint. I have been teaching for twenty years. I have from 200 to 250 students under me every year, and I can tell you those that will make the best dentists. From my experience I appreciate the fact that this manipulative ability must be cultivated at an early age. Do not wait until a man goes through the medical colleges, literary colleges, etc., to give him mechanical ability. He is then too old to develop that manual dexterity that is needed to perform the different operations he will be called upon to perform in his practice. Manipulative ability must be cultivated in the years of youth.

The subject was then passed, and the meeting adjourned to meet again at 2.30 Thursday afternoon.

(To be continued.)

---

## NORTHEASTERN DENTAL ASSOCIATION.

(Continued from page 516.)

THE next paper was one by Dr. W. C. Barrett on "Professional Education."\*

Dr. Barrett's paper gave rise to the following

### *Discussion.*

Dr. BOENNING. I wish to say that the paper is a *résumé* of facts relating to dental-medical education which is worthy of a very prominent place upon the records of your association. I am glad that Dr. Barrett, with his wide acquaintance with men of letters in the profession, has compiled the statistics of this matter.

One point is before me in a very plain way, namely, the fact that the enforcement of the present requirements of dental education considers so little a mechanical education. Mechanical aptitude and knowledge of technic are made to count for nothing, while Latin, Greek, algebra, geometry, and other studies are considered paramount whether the hand is trained or not.

In our colleges we often have applications for admission from skilled artisans, even such as those who have held responsible positions in private or government employ, and who are skilled in practical mechanics to the highest degree,—workers in gold and fine metals. We are obliged to decline them unless they have a high-school certificate. I raise the question whether in these cases the technical qualifications should not be taken into consideration.

I wish to thank Dr. Barrett for his paper. It is a most exhaustive work, and will stand for our instruction for a long time to come.

Dr. WIKSELL. Dr. Barrett would have been delighted if he could have been at the dinner given in Boston a short time ago. As one of the guests we had Dr. Preston, who is in his ninety-first year. He has practiced dentistry for sixty-five years in Boston.

---

\*See DENTAL COSMOS for March, p. 234.

When he first began there were five dentists in Boston. He was a jeweler at that time. Dr. Shepard asked if he had had a preceptor. The old man smiled and said, "No, I picked it all up." He proudly showed all of his instruments, which he had made himself. They were very well worth looking at. He had regulated some very badly mixed-up teeth with silk and wedges alone, and proudly showed a piece of saddle bridge-work made in 1839. It was a nice piece of work, and it was like listening to a voice from the past century to listen to the old man on the way he had overcome difficulties. He had no use for the rubber dam. Perhaps we never will again have a chance to hear from such a man. Someone asked him if he ever treated dead teeth. "Oh, yes," said he, "but I never warranted them."

Dr. OTTOLENGUI. I did not wish to speak on this subject, but now that I am up I will say that I was surprised at one or two things in Dr. Barrett's paper. One was to find even the smallest note of argument against preliminary education. I was surprised that Dr. Barrett would point a moral from the man who had had twenty-two years of first-class education, and the difficulty with which he was made into a good dentist. An instance like that means nothing unless it means everything, and I doubt very much if the majority of the gentlemen present would agree that better dentists could be made out of men without any preliminary educational training. How long we are getting to the point of requiring a high-school education as the preliminary. Three or four years ago this subject came up at Old Point Comfort, and I was informed that the Southern states were opposed to this standard because of the difficulty of securing a high-school education in the South. As early as 1876, when I first came to New York city to study dentistry, I graduated from the high school and had spent two years in the college; yet I came from the South. Consequently it is astonishing to me that twenty-five years afterward there should be any difficulty for young men to get a high-school education. Another thing that surprised me was to hear that the elevation of the curriculum has been entirely voluntary on the part of the colleges. I just simply say that I am surprised, and in taking my seat I ask whether the same standard would have been in existence to-day had there never been any state board to examine the merits of the college standards.

Dr. BARRETT. This paper is simply a collection of facts as they exist. There is nothing original in it, but it is a collocation of points of information which I have acquired. Dr. Ottolengui is laboring under a misapprehension. I fear he has comprehended with his elbows. And yet he is not the first who has looked ahead but an inch when he should have seen a mile. Because I have deprecated a precipitance that would ruin all; because familiarity with more than one side of the educational question has taught me what it would teach others had they the same experience that I have had,—namely, that a forward step taken in advance of the securing of firm ground on which to rest can result in nothing but being overwhelmed in a quagmire; because I have urged that legislation in great advance of popular and professional education and

comprehension must inevitably tend to defeat itself, inconsiderate and ill-judging men have,—sometimes, I fear, for purposes of their own,—raised the blatant cry against me that I am opposing a high standard of education;—I, who during my whole professional career have labored in season and out of season for higher professional and preliminary qualifications, in some instances before my detractors were born. In my own state I was active in obtaining the passage of almost the first dental law ever enacted,—quite the first in the state of New York.

“To resume specie payments is to resume,” shouted the self-assumed doctors of finance at the close of our civil war. It was hard to disprove their clamorous assertions, but time and experience demonstrated that prematurely to resume was to assure financial destruction. “He who will not be ruled by the rudder shall be ruled by the rock,” and some of our impulsive enthusiasts, possessed of more zeal than discretion are learning the lesson. An uncharted channel full of shoals is not to be navigated under full pressure of steam, except at the greatest peril.

The question is *not* whether two, four, or eight years of preliminary academical study for dental students is desirable. It is whether *under present conditions* the longest term is practicable. Whether, given eight years of special study preparatory to practice, it is better to devote five of them to general and indefinite study and preparation, or whether half the time would not better be given over to technical and special preparation. Which will make the better practical man? During the past summer one of the highest possible authorities, in the course of an address before a meeting of the best dental minds of the world, at Cambridge University, England, deprecated the bestowal of so much of the little time at our disposal upon subjects of only general interest, when there were so many fields of technical information yet unexplored. He, a professor in Cambridge University, declared that if his son were to pursue a professional line of study, he would be early withdrawn from the indefinite scholastic field and introduced to technic study before it was too late to secure the best results. So you may see that the most experienced educators realize the supreme necessity for technic education.

Notwithstanding his two years in college, notwithstanding his experience in what he appears to consider the supreme educational advantages of the South, Dr. Ottolengui claims insufficiency, and accuses me of making a plea for a low standard. I hope he will give the subject a little further thought and be enabled to grasp the real truth instead of the phantasm which he cherishes, and recognize that the best training does not mean the devotion of the whole period of education to one kind of study alone, but that the higher standard implies the greatest practicable amount of instruction in those branches which most tend to professional development. The acquirements of a Sophocles in Greek will poorly compensate for ignorance of the basal principles of philosophy and practical science, or for an undisciplined, untrained physical organization, if one desires to become a practical dentist.



Dr. Ottolengui admits the extraordinary developments in dental education and the great advancement of our colleges, but rather unfairly, it seems to me, shows his bias by refusing to give them credit for it, and intimating that it has been forced upon the schools against their will by professional pressure and the action of state boards. This is a gratuitous and uncalled-for taunt. I assert without fear of contradiction that there has not been one step in advance taken by our colleges which has not been originated by them and made of their own volition. Furthermore, some of the most momentous of them have come as a complete surprise to the profession at large, unheralded and unanticipated. Reference has been made to one or two retrogressive steps taken by the college association. When this has been a result it has been because of the shortsighted antagonism and jealousy on the part of some of the profession in certain states, which forced college men, like one of old, to come down from the walls of our professional Zion which they were building, and defend their own integrity and existence against the misdirected energy and zeal of those who, believing they were serving God and their profession, were really undermining the very foundations of all professional progress. The moment security was accomplished the forward movement was resumed, and it has not since been interrupted. Within the last year the most radical of all the progressive changes has been decided upon, that of an extension of the course of study to four years, one which places us far in advance of the school courses of any other country, for it must not be forgotten that nowhere else does the curriculum of obligatory college study cover more than two years. When, as in England and Germany, in certain instances more is demanded, all in excess of two years is taken in private offices under a kind of apprenticeship, the tutor not having any school affiliation or responsibility whatever, and the time beyond the two years not being obligatory in all cases. Does anyone claim that this great advance, which makes our course of study the same that it is in medicine, was the result of any external influence exerted, or was made because the colleges were forced into it? Why, even now the onward march is more threatened by injudicious and impulsive friends of progress than by any possible enemy.

There is nothing to be gained by shooting at each other. The work we have in hand demands mutual confidence and co-operation, and not detraction and distrust of motives. If we waste our energies in each neutralizing the good which another might do, and at the instigation of some personal dislike or distrust or jealousy throw obstacles in the path of progress, that wondrous advance which has characterized dentistry from the time of Chapin A. Harris down to the very present moment, and which is marked by the culmination of this memorable meeting, will be checked for generations to come. We have each a part to play in this important drama. Dr. Ottolengui as one of our professional journalists; you, Mr. President, as the representative head of a great society; I, as a teacher, and every one of us as members of the most progressive profession or solidarity that the world ever saw, must play his part

well if the result is to be that which we all desire. I would that Dr. Ottolengui and others of our natural leaders might see things in a different light. The work needs their co-operation and commendation of the good that is being accomplished, rather than captious criticism and the magnification of errors consequent upon possibly defective, but positively honest, judgment. It is not a time when he and I should train our guns upon each other. The journals must not fight the schools. The state boards in their endeavors to sustain the cause of education must not antagonize the only sources whence this can be obtained. Dr. Ottolengui and I have crossed swords on many an occasion, and I hope we may live to do so many times more. But in the future, as in the past, let it be in emulation and not in enmity. This world needs both of us, but not, through a failure in either comprehension or charity, each in his separate field to undo that which the other shall have wrought.

Drs. Parmele, Newton Morgan, and J. W. Shaw were then appointed as a committee to take into consideration the ideas advanced in the president's address.

Dr. Boardman moved that a committee of three be appointed to bring in a list of nominations for officers for the ensuing year.

The president appointed Drs. Boardman, Henry McManus, and George A. Maxfield as such committee.

Motion to adjourn until 8 P.M. carried.

### WEDNESDAY—*Evening Session.*

Meeting called to order by the president at 8 P.M.

The PRESIDENT. The first paper on the program to-night is entitled "Artificial Dentures, with Special Relation to the Impression, Taking the Bite, and Articulation." It gives me great pleasure to present to you the essayist, Dr. Ottolengui, of New York city.\*

### *Discussion.*

Dr. SHAW. I am heartily in accord with what the essayist says as to the use of the Bonwill articulator. I think it is the most satisfactory way in which teeth can be set up and made. In fact, I think the only way is to use the Bonwill or Gritman. I prefer the Bonwill for the grinding up that is necessary to make a perfect occlusion.

Dr. WIKSELL. There is an article which has been put on the market within the last few years called the "true bite plate," and I have been surprised since I have used it. They are simply plates such as you all have seen. I have had a great deal of pleasure in using them, as I have had less trouble in getting the bite than ever before. They are made for upper and lower, and for a combination of the two. I am surprised at the accuracy in taking the upper and lower bite, as you are then able to set up the teeth in the articulator and make the model of the teeth for trying in. This is seemingly a very careless and slipshod way of getting the bite, but I get better results than in any other way. I think Dr. Ottolengui's method, of

---

\*Paper published in the DENTAL COSMOS for May, p. 446.

making the lower plate first, the most satisfactory way of getting accurate results. He did not say anything about the treatment of the impression. I do most of the carving and changing in the impression and never use an air chamber.

Dr. SPICER. I would like to ask why it is so much better to make the lower set first. I cannot see the use of making one or the other first. I have heard no arguments in favor of it.

Dr. FAXON. There is a question I wish to ask Dr. Ottolengui in regard to taking the impression, and that is whether the misfitting plate is not due many times to the shrinkage of the plaster in taking the impression wholly of plaster, which leaves an uneven thickness of the plaster and therefore an uneven shrinkage, and in filling the impression the same trouble would occur. For the last few years it has been my method to form a tray of modeling compound and then run in a thin layer of plaster. In that process the plaster gives a very thin layer in which there would be absolutely no shrinkage. In filling that impression I add about one-fourth marble dust to the plaster, which I believe will bring the shrinkage to the minimum. I should like to hear from Dr. Ottolengui later to see if he considers this any advantage.

Dr. MEEKER. I have listened to Dr. Ottolengui's paper with great pleasure, and, like him, I had the privilege of listening to Dr. Bonwill when he first read his paper on articulation, and I bought one of his articulators and used it. I had at that time a very difficult case. While I had made seven sets of teeth, none of them stayed up, and while the suction was good, as soon as mastication began the upper plate tipped. After getting the Bonwill articulator I experimented with it and found that I did not understand what Dr. Bonwill was trying to do, and in setting up the teeth I found the trouble to be just what Dr. Ottolengui spoke of to-night. Since then I have had very little trouble in the articulation of teeth. This is a very practical paper, and we have very few such papers coming before the dental societies. It should be thoroughly discussed, and I thank Dr. Ottolengui for giving it. I was in Dr. Ottolengui's office about two weeks ago. He was then making an upper set of teeth. Three sets which he had made tipped. When he gets a chance I want him to tell the association whether he has made a success of that set of teeth. I think that dentists should tell their methods in regard to the treatment of plates. After taking the impression I cut my suction chamber from the model itself, and after I cut off evenly I trim down the hard parts, make my bite, and find whether I am correct.

Dr. OTTOLENGUI (closing the discussion). I will take the questions up in regular order. First, then, as to why the lower plate should be made first. The main reason is that the lower jaw is the jaw that moves; the upper is stationary, and mastication is simply the trituration of the food against the stationary surfaces by the surfaces that move. The lower should be made first because the mandible moves; but I will give another reason. The lower teeth show the least. The grinding of the lower teeth will be less disfiguring and therefore of less consequence; but the main reason



is on account of the overbite, or action of the lower jaw in mastication. In mastication the teeth move toward the center of the mouth,—that is to say, the buccal cusps of the lower teeth are moved in toward the cusps of the upper teeth, and the grinding of the food occurs as these two come together in that lateral action. You will, therefore, need to grind off from the outside of the lower teeth and from the inside of the upper. You originally arrange the bite to have the length of the anterior upper teeth to suit you. Consequently the effort should be to shorten these teeth as little as possible. Consequently you grind mainly from the lower labial cusps and a little from the upper palatal cusps. It is easier, much easier, to grind the lower teeth if you make the lower first. Now, in regard to the impression shrinking. That question is of course as yet unsolved. Just what difference there is between the model resulting from the impression and the original part itself is a very difficult thing to determine. That there is a difference, we all know. Consequently at some stage we have departed from the shape, and it is not an exact replica. It would be, however, if we could make a plate which would fit just as tightly as the plaster; I do not think it is on account of any shrinkage of the plaster.

This will bring me to the case of which Dr. Meeker spoke. In the first place, that gentleman was a difficult case to present; an intimate friend of mine. I was therefore particularly anxious to give him the best that New York afforded. I made him a full denture on rubber. He went away perfectly satisfied. At any rate, his lower teeth were perfectly comfortable. This autumn when I came home from my vacation, this gentleman wrote and said he could not eat, so I wrote to him to come to New York. I tried his plate in and I found it would not stay up. It chanced that in taking these teeth in and out, I told him to close his mouth, and I was amazed to find how much over the arch the plate struck. I therefore realized that the lower set of teeth was entirely wrong. I made the lower teeth over, carrying the teeth further in, and I made an upper set to occlude with them, but even then they did not work at all. I made another set of teeth, which would not stay up; but there was this fact in favor of the Bonwill articulator,—this second set of teeth which would not stay up, and which had no suction, would serve well in mastication; they were set over the ridges, and he could eat with them as he had never done before, and although they were a failure I am perfectly convinced that he could have kept these teeth and used them. But I felt that this was a problem which it was worth my while to solve by doing better. I then conceived the idea of making the set on a gold plate. I wanted to feel that I had a plate which would set up in his mouth. I made a plate on a zinc die and it had a very fair stability. I thought I would improve it, and I swaged it on a type-metal die, and they would not stay up at all. Then I made the usual changes, and the more I did with the plate the worse it got.

I am going to show you how we stumble into things. I asked him to come down to the office on Sunday, and I said, "We will make a day of it while we are at it, and I will finish you up." About

eight or nine o'clock I put this plate into his mouth and then began to manipulate it, and the more I did the worse it got,—and honestly, gentlemen, I felt just like crying. Here was a set of teeth which I could not make. Then the idea occurred to me that every time I struck that lead I was driving my plate and die further in and stretching my lead, so that I was using a lead of inaccurate shape. I made a new lead, and the gentleman is wearing the teeth with perfect comfort.

(To be continued.)

---

## SEVENTH DISTRICT DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE thirty-fourth annual meeting of the Seventh District Dental Society of the State of New York was held in the assembly room of the Osburn House, Rochester, N. Y., April 8 and 9, 1901.

### FIRST DAY—*Morning Session.*

The society was called to order at 11 A.M., Dr. W. W. Belcher in the chair.

The reports of the officers and of the standing committees were read and disposed of, the committee on Illegal Practice reporting the partial success that had followed their efforts to suppress the practice of dentistry by those without the legal qualifications in this district. They had taken action in the case of a number of such, and in nearly every case had been able to exact an agreement on the part of the illegal practitioner to cease practice. One case was pushed to a trial, but resulted in a disagreement of the jury and the discharge of the defendant,—largely due, probably, to the fact of her being a woman and for this reason appealing to the sympathy of the jurors.

### *Afternoon Session.*

The society was called to order at 2.30 P.M.

Dr. W. W. BELCHER, president of the society, read his annual address, dealing largely with a discussion of the dental law and the difficulty the society had found in enforcing the same.

There was no discussion of the president's address.

Dr. W. W. COON, of Alfred, read a paper entitled

### FURTHER ANTRUM - LA GRIPPE CONSIDERATIONS.

Dr. Coon thanked the society for the invitation to furnish a paper for its annual meeting, and said: "Two years ago you gave me the pleasure of saying something of 'Edema of the Antrum of Highmore as a Complication of La Grippe.' This is better comprehended as a specific catarrhal invasion of the maxillary sinus by the diplo-bacillus of influenza, as it is often very painfully present without any swelling of the region. Observation during the two years that have passed since that paper was read has not made me want to change or modify anything I said at that time, but I wish to use this opportunity to comment on an article entitled,

'La Grippe Odonto-Metastasis,' read before the Baltimore County Medical Society, January 17, 1901, by Wm. A. Mills, D.D.S., of Baltimore, and published in the March, 1901, DENTAL COSMOS." He then quoted cases I, II, and III described by Dr. Mills in the above-named paper and Dr. Mills's remarks about Dr. Coon's former paper, ending with Dr. Mills's paragraph asserting that if Dr. Coon's attention had been called to that particular tooth later, he would have found its pulp dead.

In reference to this statement of Dr. Mills, Dr. Coon said: "Now, I was a little surprised to read this, as my observation of any succeeding pulp trouble had been negative, and the 'particular tooth, referred to in the quotation, belonging to a lady who made regular visits to my office for tooth care, I knew was at peace up to that date, more than a year having elapsed, and I took occasion on the next visit to remove the capping, which had been placed temporarily, and the pulp was found maintaining itself all right. This pulp I subsequently devitalized to make the root ready for a crown.

"I have seen a majority of the cases, and have yet to find the first dead pulp or any indication of pulpitis or pericementitis resulting."

#### *Discussion.*

Dr. C. H. NICHOLSON said he remembered the paper of Dr. Mills, referred to by Dr. Coon, but it does not appear that there has ever been much discussion of the topic as presented. Dr. Coon seems to desire to make clear that the condition he described in his paper had not seriously affected the health of the pulp, and that in most of his cases the pulp still remains alive. As far as he could see, there was no reason why a pulp having an acute temporary inflammation caused by inflammation of the lining of the antrum should necessarily die, unless the inflammation proceeded so far as to lead to suppuration. If this does not occur, he saw no reason to expect the death of the pulp. Many cases of acute pain in the teeth and jaw are due to such inflammation, and could be cured by the procedures recommended by Dr. Mills without the necessity of the sacrifice of valuable teeth to gain access to the antrum.

Dr. R. H. HOFHEINZ congratulated Dr. Coon on being the first to describe the dental and antral troubles arising from influenza. Dentists know that during the prevalence of grippe their patients have more trouble with their teeth than at other times, suffering from frequent inflammation of the periodontal membrane and from periodontal abscesses as well. He himself had been a sufferer from this cause, and as the trouble is liable to continue after recovery from grippe is complete, he believes it is caused not entirely by the presence of the grippal bacteria, but as well by the ptomaines which are caused by their presence and which remain after bacterial life has passed. In these doubtful cases he finds electricity the best remedy. He applies the positive pole over the Gasserian ganglion with a power of about twenty-five volts, the negative pole being held in the hand of the patient. Many periodontal abscesses which



he could not cure with any other treatment succumbed to electricity.

Dr. B. S. HERT said that he had been much indebted to Dr. Coon for his former paper, as it enabled him to treat successfully these troublesome and puzzling cases of dental trouble arising from antral inflammation. He asked Dr. Coon whether such inflammations in the antrum ever opened up through the face.

Dr. COON. Very rarely, if ever. There is generally much pain in such cases, but very little discharge.

Dr. BUNBURY related a case of neuralgia following the grippe. The patient was sure that the trouble was from the upper first bicuspid. This tooth had a filling which he took out, thereby revealing a healthy pulp; the tooth was refilled, and afterward pus was found to be coming from between the second bicuspid and the first molar. The patient insisted on the extraction of the first molar, which with much difficulty was accomplished, bringing part of the antral wall with it. A very considerable flow of pus followed, and with appropriate treatment the trouble was finally cured.

Dr. F. W. PROSEUS had found many cases of painful teeth and abscess following the grippe, and also following tonsillitis. He referred to a case, reported in a medical journal, of appendicitis following grippe, and believed that many of the tissues of the body were liable to undergo changes under grippal conditions.

On motion the subject was passed, and Dr. J. EDWARD LINE, D.D.S., Rochester, N. Y., read the following paper:

#### FAST AND SLOW SEPARATION: LESIONS INCIDENT THERETO WHEN OVERDONE.

Separation of some kind dates probably from the very first attempts at operative interference for the safeguarding of approximal surfaces of teeth. The file and chisel as cutters of tooth-tissue, whether for the eradication of decayed material or as mere modifiers of form, came early in the history of dentistry, the former being given the preference because of its ease of application and effectiveness. The separations made by this instrument were rarely carried beyond the cervical enamel, as this would have defeated the prime object in view,—the prevention of contact throughout the greater length of the opposing surfaces. Sometimes this separation was effected by the safe-sided file; again, by the file cut on both sides; or the safe-sided instrument was applied first to one tooth, then turned over and applied to the other. This separation was carried, as already suggested, to, but not through, the cervical enamel, the desirability of keeping teeth apart in places as a preventive of decay being as clearly recognized and as fully appreciated then as now.

The objects of this separation were manifold,—to secure a clear view of the surfaces to be operated upon, whether for the removal of eye-offending stains, the enucleation of diseased tissue, easy approach to cavities for filling purposes, or change of tooth-form only. This last, it may be recalled, was the prevailing idea of the

Arthur method, wherein the contour of the tooth was radically altered by filing or chiseling into forms that left as little of adjoining tissue in contact as possible.

While the means by which this separation was effected were chiefly the two instruments named, the application of force (credited to the late Dr. E. Parmly) by means of wedges of wood, or some of its refinements in the form of cotton wool, tape, and twine, came into play, and then India rubber, whose resilience seemed in some instances to know no limit. These may all be rated as means of effecting slow separation, the patient returning for the proposed operation in a day or possibly a week, according to the necessities of the case or the convenience of those most concerned.

Later, quicker methods came into vogue. A good wedge was driven, by means of a light hammer or mallet, between the teeth at or near the cutting edge, and while this was still in place another and thicker wedge was driven to place just above it. Wedge number one was then removed and one of the third degree substituted, and thus on till the desired separation had been obtained. This method eventuated in the introduction of a wedge-carrying forceps, one beak of which held the tapering wood, the other a wood or hard rubber pad for application to the lingual surfaces of the teeth. In due time came the steel separators, than several of which nothing more could be desired, whether for compactness, ease of application, speed, or effectiveness in forcing apart contiguous teeth. And with these desirable additions to our operative outfit came speedier means of injuring the tissues whose structure, location, and relation make separation of the teeth possible.

The structure immediately concerned and in which the primary lesion occurs when separation is overdone, is the peridental membrane. This is said to "swing the tooth in its socket," cushion it, attach it to the jaw, and supply the means by or through which the nutritive and sensory functions are carried on. What are known as the "principal fibers" (Black) constitute the bulk of the organ. These are fixed at one end in the cementum, at the other in the bone; and, what is not commonly known, they pass from one tooth through the thinnest part of the septa to the roots of contiguous teeth. These fibers are shown diagrammatically to run (in an upper tooth, for example) from the cementum downward and outward, or toward the wall of the alveolus, and it is because of this supposed general direction of these fibers and their alleged shortening in inflammation of the membrane, that the tooth is said to be thrown in some degree from its socket. But the direction of the fibers is not as described, except at or near the cervix. At the apex they reach upward, and more or less midway they strike directly across (Black).

Again, the extrusion of the tooth is said to be due not only to the direction of the fibers, but also to their capability of shortening. Here we have an effect regarded as the cause, but we must keep in mind the fact that the principal fibers of the membrane are white fibrous tissue closely related to tendon, and all but totally devoid of the property of contractility. In short, we have been



assigning to the distinctively fibrous element of the peridental membrane a property that belongs to yellow elastic tissue, and crediting it with an effect in the tooth producible only by the latter tissue.

This is the organ we have chiefly to consider in forcing teeth from their normal into strange positions. When force is applied to separate teeth two effects are noted, or better, the resultant of the two: First the tooth (one or the other, or both) is drawn down, and if the force applied be sufficient, the normal limit is reached when the waviness of the principal fibers at and near the apex of the root has been disposed of, when their "slack," so to speak, has been taken up, and second, when the tooth is thrown against the wall of the alveolus opposite that to which the force has been applied, and the normal limit here is the rim of the socket, allowing of course for the pinched and all but displaced membrane between the tooth and bone. "More than this cometh of evil."

Someone objects that in orthodontia there is practically no limit to which a tooth may be moved. Admitted; but the teeth in these cases are moved from their natural (not necessarily normal) position for good, and into their new position as a permanent abiding-place, with or without rupture of the tissues according to the extent of the movement and the time consumed in effecting it; whereas in our cases of temporary separation we look to the tooth to make a quick return to its old relations with other teeth. This is expected in the youthful subject (a qualification that applies particularly in orthodontia), and disappointment is rarely experienced. It is also expected in the subject no longer young, and while the operator is rarely disappointed in the immediate result, later in special cases both operator and patient wonder at the gradually increasing space between given teeth: why they should move apart; why so rapidly when once started; why there should be torsion, why protrusion, why extrusion, and especially in patients in whom, under even ordinary circumstances, there is a marked tendency to a wandering of the teeth from their normal positions, and doubly so in the apparently ever-increasing class of pyorrheatics.

Separation overdone, coupled with the age of the patient, accounts for it perfectly, for the mischief is directly as the force applied, the extent of the movement, the time consumed in the effort, and the age of the person subjected to the operation,—a proposition made clear when it is called to mind that the membrane is thinner, relatively much more fibrous, with an ever-increasing inability to effect repairs. In short, its formation, vegetations, and feeding capabilities are practically *nil*, hence the permanence of results that follow injury to certain of its parts.

In slow separation we may have irritation, which in itself is of little consequence; inflammation terminating as a rule in resolution or (now rare) in suppuration,—an outcome not infrequently seen in times past, but due ever to ignorance, indifference, or sheer neglect on the part of operator, or patient, or both.

In rapid, immediate separation, when overdone, we have a tear-



ing apart, a rupture of the fibers of the membrane, chiefly on the side of the tooth to which the force is applied. If extremely overdone, it may rupture fibers in the deeper parts of the alveolus. Then the vessels come in for their share in the general breakdown, and from them extravasation takes place. Fibers must be pieced out, repaired, healed, reorganizations must be effected in and about the ruptured vessels,—all this in the lining of a socket normally filled to the rim. We have extra tissue, tissue over and above the normal requirements of the parts involved,—tissue that by a little stretching of the term may be described, particularly in the adult, as “cicatricial” tissue,—that lets go on slight provocation and permits or furthers this separation, this shifting of position that is intermittently progressive to a degree that means eventually the loss of the tooth.

And this holds good whether in slow methods that put fibers and other tissue-elements on the stretch with more or less inflammatory action and products, or in fast methods where there is a clean rupture forthwith of the several tissue elements that normally tie together. In either case nature sets about the task of introducing a “dutchman” (or a number of them),—a block of tissue to piece out a bad break or a badly made joint, and nature rarely wholly displaces the dutchman.

Another injury that may attend or follow a too vigorous application of the immediate method is the fracture of the septum at or near the rim of the socket. Notwithstanding the union of the fractured part, the return of the piece of bone to its former place and its unimpaired function as a support is extremely problematical. This condition of things also favors the drift of the moved tooth fractureward.

Still another injury that may follow either slow or fast forcing of the teeth apart when pushed too far is the extra tension placed upon the nerves and vessels entering the apical foramina. This stretching may result, as in the great majority of cases, in merely a temporary disarrangement of the structure of the vascular and nerve supply. In some cases it may be found to mean actual rupture or severance of these contributors to the tooth’s well-being. That the nerve is affected, stretched, robbed of its transmitting powers, is a matter of daily observation, for a wedged tooth in course of separation or wedge held while under operation, is invariably less sensitive than one that dangles freely in its socket, and this nerve-stretching may and does result (has resulted in more cases than some operators care to remember) in nerve-rupture and disintegration, with which should be included stretching disintegration, rupture of the muscles, and sooner or later death of the pulp.

### *Discussion.*

Dr. R. H. HOFHEINZ regretted that he had had no opportunity to read the paper over before the meeting, to prepare himself better for the discussion. He had never heard a better paper on the subject, and it was so full that he felt embarrassed. The question of permanent separations, however, he would dismiss as an antiquated

method not practiced or upheld at the present time, as far as he knew, by anyone.

Among beginners there frequently is a tendency to needless over-separation. This should be guarded against. With the present methods of filling, and especially at this day in the generally accepted method of extending the cavity for the prevention of recurring decay, the necessity for wide separation is less frequently found, except in porcelain inlay work, where, as the filling has to be inserted in one piece, we must as a matter of necessity separate widely enough to insert it at once. Porcelain inlay work is increasing among dentists now, and so this subject is especially timely.

The limit of safe separation of which Dr. Line spoke,—that is, when the fibers of the peridental membrane are drawn entirely straight and the tooth brought in direct contact with the alveolus,—is a matter of guess, as we cannot know for certain when that limit is reached. It is not a question of pain, as the pain is often greatest at the beginning of the operation.

He did not know any separator that could be considered ideal for the anterior teeth; for posterior teeth the Perry separator is the nearest to the ideal. In many cases the excessive pain from the operation of separating the teeth is caused by the misapplication of the separator and can be avoided by the exercise of due care. The application of cocain is found effective in his hands to lessen the pain. Many times the bows of the separator wound the gums on the lingual side, and cause unnecessary suffering. This can be remedied by care in applying the separator.

Separation should be slow, and teeth once separated should not be allowed to come together until the filling is finished, as this causes unnecessary pain. By slow separation more space can be gained than can be had by fast separation. Injury to the peridental membrane is not the only source of trouble in separating teeth, the destruction of the pulp being always possible if the separation is carried too far or too fast, and this is much more serious. In slow separation he has abandoned the use of rubber wedges, as they cause too much pain by impinging on the gum. When he does use rubber he protects the gum by the use of cotton saturated with benzoin. He only uses it, however, when it is absolutely necessary that the maximum of separation must be had within twenty-four hours. He ordinarily uses cotton, and he would call attention to the necessity of the space being thoroughly dry when the cotton is inserted. The action of the cotton is caused by the fibers swelling as they become saturated with moisture, and if they are saturated when they are put in place, there will be little more expansion.

As to the damage to the peridental membrane, the separation being a temporary movement, he believes that the return of the tooth to its normal position would restore the peridental membrane to its natural state. It is therefore important not to let the teeth remain separated longer than necessary. The articulation will do a great deal toward moving a posterior tooth back to its original position.

Dr. F. W. KETNER, Hudson, had abandoned rubber in favor of

cotton, and agreed in the advisability of filling the separated teeth as soon as the required space was gained, so that the teeth could return to their normal positions as soon as possible.

Dr. H. L. BELCHER, Buffalo, preferred the use of metallic separators, as they are quicker and give less trouble to both patient and operator.

Dr. B. S. HERT used the Darby separator for posterior teeth. It caused less pain, and was more convenient in his hands than any other. For anterior teeth he preferred rubber wedges, but only allowed them to remain for two or three hours; these gave all the space usually needed and did not cause that intense suffering which would come if they remained longer.

Dr. H. H. TOMPKINS, Utica, considered that the impingement of the bows of the separators upon the gums was the cause of most of the pain which comes from the use of separators, and if this be avoided there would be but little suffering from their employment. He asked the members present if they had found that pulps of teeth were often killed by separation.

Dr. HOFHEINZ could not say how many such cases he had seen, but was sure there were some in his own practice, and in the dispensary he had seen many. If the teeth are moved to any great degree, the nerve must of necessity be strangulated. There can be no more doubt about it than there is about the injury to the periodontal membrane.

Dr. C. H. NICHOLSON asked Dr. Hofheinz how he applied cocain to the gums to lessen the pain of separation.

Dr. HOFHEINZ said he applied it by means of a spray and compressed air. The after treatment is to crowd the tooth back into place, and if there are any signs of inflammation, apply iodine and the tincture of myrrh.

Dr. LINE, in closing the discussion, said that with the separator of which he spoke there was no danger of hurting the gum, as it was placed where the teeth are nearest in contact and not against the gum; when the desired space was obtained, he put an orange-wood wedge to hold it while the filling was done.

The subject was passed, and Dr. G. GOODE, Buffalo, N. Y., read a short paper on

### ETHICS.

Accepting the definition of professional ethics as applied to the dentist as (1) His duty to the general cause of humanity, (2) His duty to the laity, (3) His duty to the profession and to professional brethren, he confined his remarks to the dentist's duty to the laity. We quote as follows: In my opinion, the future of the dental profession from now on depends more on the perfect performance of duty to his patients by the practitioner than upon any other factor.

The desire and effort to compete with the confessedly low-priced, and necessarily poor-working, advertisers by some men who are within the ranks of the societies mark a dangerous tendency as far as the position of the profession is concerned.



Dating from the advent of crown- and bridge-work is seen the beginning of the charlatan's halcyon days, and I can give no better explanation of this than the fact that that line of work being so purely mechanical has made opportunities which men with the trade spirit greatly predominating have been ready to accept. Without attempting to detract from the popularity and great value of crown- and bridge-work, I think that a plea for a much more conservative use of it, if followed, would tend to an improvement. No greater dereliction of duty to a patient is known to me than the crowning of teeth unnecessarily.

The education of the people as to the disadvantages of this work has been greatly neglected, and with a perfect understanding of its limitations by patients comes an immediate lowering of the position of the purely mechanical.

The advisory position which practitioners fill is probably the one in which the sense of duty is most severely tried. The desire to recommend that which is most profitable to oneself, if not to the best advantage of the patient, has to be controlled. How often do we know of cases in which fillings have been inserted where probably none were needed, while the operator has remained judiciously blind to gaping cavities because they presented some difficulties or uncertainties. Men who use their superior knowledge of the practice for their own benefit only, and misadvise patients to their injury, betraying their confidence for gain, are guilty of more than a mere breach of ethics.

When dentists are less engrossed with the artistic treatment of teeth and the development of mechanical appliances, and study dental caries and other diseased conditions more from the standpoints of therapeutics and prophylaxis, then will we approach the condition of ethical standing which should be everyone's ideal.

### *Discussion.*

Dr. FRANK FRENCH said the subject of dental ethics is one of deep interest to all members of the dental profession. The code is the same in all societies from the local society to the international. All professional dentists subscribe to and should be governed by the same code. Ordinarily, the section of the code which provokes most discussion is the one forbidding advertising. He then quoted this section of the code, and said with all these signposts there would seem to be but little danger of getting off the track, and many complain that they are kept too close. He thought many complaints regarding transgression of the code arose from a feeling of jealousy against a more successful practitioner, and those who feel impelled to look too closely for infractions should study their own motives to be sure that they are not unworthy.

Dr. F. L. SIBLEY doubted the benefit of a code of ethics, as it would always be subject to infraction until we could change the character and spirit of the members of the profession.

Dr. F. W. PROSEUS said he enjoyed Dr. Goode's paper and knew that if all lived up to the code as well as Dr. Goode did, we would all do our duty by it. It was a pity more members of the profes-

sion were not ethical men and members of the dental societies. A few weeks ago he was in the capital of one of the Western states, and on inquiry he learned that only one dentist in that city was a member of a dental society. He learned that the practice of dentistry was generally carried on in a way that showed little regard to any code of ethics or professional feeling. Prices had been cut until no one could command enough for his work to afford to do it as it should be done, and quantity rather than quality was the rule. One of the dentists told him that the highest price any man in town got for a gold crown was five dollars, but that he often put on from six to eight such crowns in a day. This indicates the class of work done. He had never seen such poor work in dentistry as he saw there.

The matter of fees is one which gives rise to much trouble, and it must to a certain extent be governed by circumstances, but no dentist should feel hurt because another receives a larger fee for his work. He spoke of a patient who came to his office recently. On examining her mouth he observed some very beautiful gold fillings, and thinking he recognized the workmanship, he said to her, "Dr. ——— is your dentist, is he not?" She said, "How did you know?" He told her, by the excellent work he found in her mouth. She said, "Well! I paid sixteen dollars apiece for those fillings and they ought to be good." He told her they were well worth every cent of it. Many dentists would have told her she had been robbed, and this tendency to depreciate the work of others is what lowers the whole profession in the eyes of the public.

In Rochester, a better social feeling among the dentists exists than anywhere else that he knew of, and he believed every professional dentist was glad when he saw any sort of advancement come to any other. While this feeling exists and increases there will be little need to fear the advertising man.

Dr. H. S. BELCHER said the question of ethics was one of vital importance to the young men in the profession, especially as the existing condition is, to them, a serious problem. It is usually assumed that the work in advertising offices and dental parlors is necessarily poor, but this is not always true, as some of them do good work, but the young dentist who has office rent and other expenses to meet is often puzzled and worried by the restrictions of the code and the necessities of his position.

Patients go to dental offices in a bargaining spirit, and where they can get work for the least money is where they have it done. This the young dentist must recognize, and if he wants the work he will have to do it for less than the well-established dentist can command, with his well-secured practice. Little things frequently control the patient's mind. Not long ago a patient called upon him and asked his price for a best set of teeth. Upon being told twelve dollars, she said that having asked another dentist the same question, he had replied twelve or fifteen dollars, and she thought it very funny that he could have two prices for the same goods, and she let Dr. Belcher make the teeth. Many a young dentist would like to live up to the code of ethics, but the shopping instinct among

the people is so strong that they are, and apparently must often be, governed by it.

Dr. W. A. WHITE said that he considered the subject of ethics of vital importance. If young dentists go into the profession and try to follow their own ideas of right and wrong, the consequence will be that dentistry will cease to be a profession, and it will become a commercial calling. He had tried to follow in the footsteps of those who had been instrumental in placing dentistry on the high professional plane it now occupies. He lives in a rural community, but believes he receives better prices than do many dentists in Rochester and the other large cities of the state, and this is because he has always regarded his professional work as being worthy of a just reward.

Dr. HOFHEINZ took the opportunity to say some very pleasant things in regard to the author of the paper, as one who, though young in the profession, strictly lived up to the code of ethics, and of Dr. French, who opened the discussion. He felt sure that in years to come the dentists of New York state would realize that they owed much to Dr. French, who all his life has been the consistent exponent of the ethical professional life and a tireless champion of the code before the profession. It is certainly a grand idea to have such a code of ethics, and it is a grander one to live up to such a code.

As to the question of the use of crown-work instead of fillings. In the case of an ordinary dentist a crown is often a better monument to his skill than would be a filling which he knew would fail in a short time. It is a question of ability in the dentist rather than ethics which often must decide the operation.

Every dentist should do some work gratis,—for the poor. There is no profession that lends itself less to this gratuitous service to those who need it and cannot pay for it than does the dental profession, and we ought to do more.

The ethical relation of the dentist to the laity is a question of honesty. He should always give his best service, and it does not matter what he charges for work done, if the work is worthy. It is certainly no breach of ethics for a young man to charge less than an old practitioner, but it is a breach of ethics if this lower charge is advertised to bring him practice. The young dentist is not qualified to earn the higher fees that the more experienced and better skilled practitioner may justly receive.

As to ethics in connection with dental colleges. He knew that Dr. Proseus believes that the colleges are largely responsible for unethical dentistry, but this is not true. He thought it should be distinctly understood that colleges could not instil into men the ethical instinct if nature has denied it to them from birth.

Dr. GOODE said that the complimentary things said about his paper and himself made him remember the pleasant condition of professional sociability that exists in Rochester, which since his removal he has missed very much. He thought he perhaps had not understood Dr. Belcher's reference to shopping. He does not have people shop with him, he has no time for it, neither does he shop



for work. Advertising men may be good workmen and may do good work, but he does not believe they can do such service as professionally cultivated dentists who work for fair fees are able to do and are justified in doing by the fair prices they receive. The idea of shopping gives rise to the thought that dentists have different qualities of service to render. This is all wrong; there is no best work among ethical men, or rather there is nothing but the best. We are working for the good of humanity, the good of our patients, and unless we render our best service in every case we are falling short of our duty.

The subject was passed, and Dr. C. C. BACHMAN read a paper entitled

#### LOWER IMPRESSIONS AND CUSHION LOWER PLATES FOR SPECIAL WORK.

Dr. Bachman's contention was that most dentists take an impression hurriedly and in the manner easiest for them at the moment, without considering that a few minutes spent at that time to secure good results would be more than compensated for by the ease and satisfaction with which the finished denture can be inserted.

In preparing a tray for a lower impression he cuts away in front and at back all parts of the tray that will compress those parts of the mouth that are liable to movement in speaking, talking, laughing, or eating, etc. After the tray is in the desired shape, he fills it with soft plaster, and having the patient open the mouth, not too wide, he presses it gently to place. When the tray is well down he has the patient open the mouth wide, then close it, and repeat this several times. At the same time the tongue is raised up, pushed well out of the mouth, and moved laterally. These movements, taking place while the plaster is setting, will cause it to indicate very clearly the area of the alveolar ridge that the plate can occupy and not be dislodged by the surrounding tissues when in action. Even though the rim edge of the denture be very uneven, he does not cut the projecting part away to make it look more pleasing to the eye, as by so doing much of the rim bearing of the denture is destroyed, bringing more pressure on certain other parts.

The cushion lower plate described was made for a lady whose mouth was exceedingly tender, and as she had already had twelve lower plates made and could wear none of them, she was very much discouraged. The idea of a plate with a soft-rubber cushion occurred to him and he made one with the whole lower surface of the plate made of palate rubber about one-sixteenth of an inch in thickness. The experiment was successful and the plate is worn with comfort.

In cases where the alveolar ridge is sharp he has made plates having merely a narrow strip of palate rubber to relieve the denture at the top of the alveolar ridge. With this method of relief he has good results in cases where the six anterior teeth remain and the posterior lower teeth have been extracted for years, leaving the ridge very thin and sharp.

*Discussion.*

Dr. J. EDWARD LINE said that he had had trouble with lower dentures, much of it due to the over-extension of the plate. Many years ago a dentist who always made gold plates told him that the best rule is to cut away all of the plate you dare to, and then to cut away just a little more. The plate does not require the extension to hold it in place, and on the other hand it furnishes a lever, so to speak, by which the plate will be lifted by the movements of the mouth from the place where it should remain.

Dr. BACHMAN said that if the tongue be thrust out while the plaster is still soft, and the mouth twisted in every direction, the impression will be so shaped that the plate will only cover so much as is absolutely necessary and there will be nothing to cut away.

Dr. HOFHEINZ said that he saw the reason for Dr. Bachman's procedure and approved it. He remembered that Dr. Southworth once told him that he never got a lower plate to fit until he spoiled it, and that seems to be nearly the case.

He asked Dr. Bachman if the soft rubber lining shown would not absorb the fluids of the mouth and become offensive.

Dr. BACHMAN said it would not, at least not for a considerable time, while it would certainly relieve the pain that hard rubber caused the tender gum.

Dr. F. M. ROOD thought Dr. Bachman's method of taking impressions a good one. It is much better to get the impression right at first, as this seems to do, than to depend upon cutting it away afterward.

---

## TRI-STATE MEETING OF THE OHIO, MICHIGAN, AND INDIANA DENTAL ASSOCIATIONS.

(Continued from page 150.)

### SECOND DAY.

Dr. W. A. HECKARD, Indianapolis, read his paper entitled "Continued Anesthesia with Nitrous Oxid, under Definite Pressure."\*

After the discussion which followed the reading of Dr. Heckard's paper,

Dr. C. N. JOHNSON, Chicago, Ill., read a paper entitled "Critical Periods in the History of Human Teeth."

A lengthy discussion followed, after which the meeting adjourned.

### THIRD DAY.

The morning session was occupied by lectures with lantern-slide illustrations, as follows:

"Application of Roentgen Rays in Dentistry," by Dr. WESTON A. PRICE, Cleveland, Ohio.

"Correction of Dento-Facial Deformities by Combined Prosthesis and Orthopedia," by Dr. CALVIN T. CASE, Chicago, Ill.

---

\*Printed in full in DENTAL COSMOS for January, 1902, p. 16.

Then followed a "Stereopticon Exhibit on Surgery of the Palate," by Dr. TRUMAN W. BROPHY, Chicago, Ill.

### *Afternoon Session.*

This session was devoted to the presentation of a paper by Dr. C. M. WRIGHT, Cincinnati, entitled "Septic Gingival Catarrh; Disease of the Gum Borders and Sockets of the Teeth."\*

### *Discussion.*

Dr. TAFT stated that diseases of the gums are of serious character because of their insidious nature, and usually the patient does not recognize that anything alarming has taken place until the various phases of the affection have made much progress in their career; so that when the dentist or physician is applied to for relief he finds a serious case of gum or alveolar disease.

Another trouble consists in the fact that more than one-half of the practitioners of dentistry do not appreciate the seriousness of this disease, and do not realize that it is necessary to go any further than a mere local treatment. After reviewing the works of Harris, Hayden, Peirce, Mills, and others, Dr. Taft said that local irritation was not the only source of irritation, and that the faulty or abnormal condition assumed by the saliva is no doubt a factor directly or indirectly in inducing and in continuing this affection. He expressed the desire of seeing one or more men take up an exhaustive study of the oral fluids, as the elucidation of this problem would clear up many difficulties which confront us now, and added, that undoubtedly systemic conditions do influence diseases of the gums. Dr. Taft then said that the remedy for this affection in its earlier stages would be comparatively easy were it possible to have the patients under control so that they could be seen at short intervals and be examined often. He then dwelt upon the necessity of making a thorough diagnosis and of obtaining the history of the case and also of the patient's ancestors as far as the teeth are concerned.

Dr. Taft finished his remarks by saying that the dentist should warn his patient of the danger to which he is liable, and should induce him to give the malady the necessary attention from the beginning, as three-fourths of the cases of gum disease might be remedied were attention given to them in their early stages, and were patients to realize the importance of prompt and thorough treatment.

The next paper on the program was one by Dr. N. S. HOFF, entitled "A Study in Bleaching Teeth."†

### *Discussion.*

Dr. J. S. CASSIDY. As might have been expected, Dr. Hoff's paper has been a success. It is one of the best I ever heard on the subject, a subject which is well worthy of our careful study. I am sorry that my time is too limited to discuss it as it deserves.

---

\*Printed in full in DENTAL COSMOS for February, 1902, p. 119.

†*Ibid.*, p. 101.



One fact is proven by Dr. Hoff's experiments, namely, that no one bleaching agent will answer the purpose equally well in all cases of bleaching teeth, because of the fact that the objectionable colors are due to so many different causes, even in the same tooth. Theoretically, I should presume that twenty-five per cent. pyrozone would be the best bleacher for the essential oils and the camphors, not alone because it is rich in oxygen, but also because the menstruum is ether, and all of the essential oils and most of their camphors are soluble in that liquid. The advantage in the sodium peroxid, as indicated in some of the specimens shown, over the pyrozone, might be due to the fact that the sulfuric acid afterward used might have acted somewhat as a bleacher itself; or because of the possibility of an oily residue in the coloring matter which would become saponified by the caustic soda, forming a soluble substance which would allow the oxygen of the peroxid to act more freely.

I want to say a word about this new drug, "benzozone." Dr. Hoff is too modest to claim the discovery himself, but to him all the credit is due of discovering this drug as a bleacher. It was introduced by the manufacturer as a germicide and disinfectant, and it is a good one. I should judge by its formula that it is rather slow in its action, that from each molecule but one atom of oxygen will act, and as Dr. Hoff suggests, this slowness of action might be an advantage, as it permits of leaving the benzozone in the tooth over night, or even longer, without injury. The acidity present is not objectionable, because it is made up mostly of benzoic and acetic acids, both of which are practically inert upon tooth-substance. So far as the chlorin compounds are concerned, I have not had much use for them as bleachers for some time. I noticed a disintegration of the enamel by the hydrochloric acid which they developed.

Now, just a word in regard to the reducing and oxidizing bodies. Both chlorin compounds and oxygen compounds might act as reducing agents under certain circumstances. The general action of chlorin itself, or chlorin compounds, on organic compounds is to remove an atom of hydrogen, an atom of chlorin taking its place. If chlorin would reduce the coloring matter in that way, the coloring matter would be destroyed in most cases, but at the same time other atoms of chlorin would reduce the water that is present, for moisture is a necessity in this process. Thus free oxygen would be given off from the moisture, and would form, in nearly all such cases, oxids that are destitute of color. Oxygen also acts in many cases as a reducing agent. It destroys alcohols by reducing them to aldehyds, and adds itself to the aldehyds to form acids, so that it may act as a reducing agent on the alcohols, but as a rule it acts directly, more easily, at a lower temperature, and in less time, than where it acts as a reducing agent. It is able to add itself to certain compounds because it can enter without disturbing the valency of the other elements in the already saturated compound; owing to its valency of 2, it is able to neutralize one unit, while introducing another.

Dr. JNO. P. BUCKLEY, Chicago, Ill. The subject of bleaching teeth has been somewhat slighted in the recent past by the various writers and thinkers of our profession, and it pleases me greatly to know, therefore, that the essayist has given some of his time and thought to the solving of some of the knotty problems connected with the process of bleaching teeth. The essayist has gone into an experimental study of this question. Such experimental work as this can only be spoken of in the highest terms. But, valuable though we all recognize it to be from a scientific standpoint, I do not see, in so far as the practical application of it is concerned, that it has added much enlightenment to the practical methods of bleaching teeth in the mouths of patients. In fact, the essayist admits this in the closing of the essay. It may be that the method used in this experimental work would not justify the results and could not be employed in practical work,—that changes would have to be made before they could be made practical. Indeed, I am afraid we should have to modify them so much that in the practical work of bleaching teeth in the mouths of patients we could scarcely recognize any remnants of the methods which he has adopted.

I agree with the essayist when he says that in studying this question from the theoretical aspect we are confronted by complicated problems, but I do not believe we ought to allow these complicated problems to discourage or dishearten us. Instead of discouraging us, complicated though we recognize them to be, they ought to act as a stimulus to force us deeper into the subject that we may ultimately arrive at the correct solution.

The essayist also says, "It is still more difficult to determine the nature of possible reactions when there is present in the tooth-structure the chemical detritus resulting from the necrotic processes."

This chemical detritus which results from the decomposition of the pulp, and which is in the tooth-structure, to my mind has more to do, if not all to do, with the discoloration of teeth that we are called upon to bleach in the mouths of patients than have the so-called chemical or remedial agents used in the antiseptic treatment of these teeth.

The essayist has mentioned many chemicals among the class of agents which he says are ordinarily used in the antiseptic treatment of teeth. He uses oil of cassia, iodized phenol or the iodine compounds, naphthol, and some others. I had supposed that those agents had long ago been discarded by the more progressive dentists in the treatment of anterior teeth the crowns of which they expect to save in the natural condition. Such other agents as he has mentioned I do not believe stain the teeth when properly used in the antiseptic treatment of those teeth. Among those I should draw a line under eucalyptol and oil of cloves.

I want to read one more statement from this essay, and I read it in the exact words of the essayist, because I want to agree with every word in the statement. Referring to these complicated questions which are liable to discourage us, he says: "Notwith-



standing these difficulties, successful methods of bleaching teeth will never be made practicable until some definite theoretical knowledge is obtained." This, to my mind, is the main thing in connection with this subject,—the study of the theoretical aspect, that definite theoretical knowledge which we must have, and which we must thoroughly understand, before we can adopt any successful method of bleaching.

The essayist has gone very elaborately into the discussion of chemicals to be employed in bleaching teeth. The question of chemicals is a secondary consideration. Before we can select a proper chemical to bleach a tooth we must know definitely and specifically the nature and character of the pigment that is formed, that has discolored that tooth, before we can expect that chemical to destroy or remove that pigment.

I agree with the essayist in his discussion of the different methods and the different chemical principles employed in the bleaching of teeth. He has mentioned the oxidizers, direct and indirect, the reducing agents or the deoxidizing agents. I agree with him when he says that the best method of bleaching these teeth is by using the oxidizing agents, those which give off their oxygen readily. In this class he has placed twenty-five per cent. pyrozone, sodium dioxid, the new chemical which he has referred to, benzoyl acetyl dioxid, and hydrogen dioxid. I wish, by the way, we could always be accurate in giving these agents their chemical names; the essayist has referred to them as the "per-oxid" the correct chemical name being the "dioxid" of these positive radicals, whatever they may be.

In the conclusion of this essay the essayist says that naturally he found that the twenty-five per cent. pyrozone gave the best results in the bleaching of these stains. Sodium dioxid came second. In fact he says that the two stains which were the most profound, the iodine and the creasote, were best bleached by the alkaline sodium dioxid. All of them were nearly as well bleached by the use of this chemical as were those which were very materially affected by the twenty-five per cent. pyrozone.

In the practical art of bleaching teeth in the mouths of individuals, from my own limited experience I should place sodium dioxid as a bleaching agent second to none, placing the twenty-five per cent. pyrozone second.

Benzoyl acetyl dioxid I can only speak of from a theoretical standpoint, as I never heard of it until I saw it referred to by the essayist in his article.

Sodium dioxid is of absolutely no use to us as a bleaching agent unless we really get *sodium dioxid*. The thing that we buy ordinarily in the drug stores labelled "sodium dioxid" is nothing more nor less than sodium hydroxid. But I am supposing that we get the pure sodium dioxid, which is yellow. If this chemical is placed in the cavity of the tooth and moistened with distilled water a reaction is at once set up. Oxygen is generated, and oxygen in that allotropic form, ozone, the most active oxidizing agent we have. The by-product produced by this chemical when



it is decomposed by distilled water is sodium hydroxid. The ozonized oxygen will enter the tubuli and change these iron compounds that have discolored the tooth, but does not change them into a soluble form. It changes them into another compound which is still insoluble; but the oxygen is followed up by sodium hydroxid, forming a soluble soap of the fatty globules in the tubuli, which can be washed out by simply washing the tooth in warm distilled water, mechanically bringing with it the insoluble, oxidized coloring material, and that I believe to be the way we must remove this pigment, in a detergent way. The only chemical that will aid us in doing this is sodium dioxid, the by-product being a caustic alkali.

Concerning this new chemical, "benzoyl acetyl dioxid." I see from the label on the phial that the formula is  $C_6H_5COO_2COCH_3$ . Under ordinary conditions I can see that it would, perhaps, by the heat of the body, unite with a molecule of water and form a molecule of benzoic acid, the formula of which is  $C_6H_5COOH$ , and a molecule of acetic acid, the formula of which is  $CH_3COOH$ , leaving an atom of nascent oxygen ( $C_6H_5COO_2COCH_3 + H_2O = C_6H_5COOH + CH_3COOH + O$  nascent). Nascent oxygen is an oxidizer and hence it is a bleacher. This compound, then, undoubtedly,—and I am only speaking of it from the theoretical aspect,—has some bleaching properties; but the benzoic and acetic acids produced by the use of the substance, organic though they be in their nature, would not have that saponifying action upon the contents of the tubuli that we get by the use of sodium dioxid.

The next paper was one by Dr. GEO. E. JOHNSON, entitled "The Human Face and Articulate Speech Divine."\*

A short discussion followed, when the meeting adjourned *sine die*.

## DENTAL SOCIETY OF THE STATE OF NEW YORK.

### EXTRACT FROM THE PROCEEDINGS AT THE ANNUAL MEETING: CORRESPONDENT'S REPORT.

At the annual meeting of the Dental Society of the State of New York, held at Albany, May 14 and 15, 1902, Dr. Henry D. Hatch, the Correspondent of the society, presented the following paper as his report:

#### A PLAN FOR THE FURTHERANCE OF SCIENTIFIC RESEARCH AND THE ELEVATION OF OUR PROFESSION BY AFFILIATION WITH THE CARNEGIE INSTITUTION, OF WASHINGTON, D. C.

*Mr. President and Gentlemen:* Those of you who remember my report three years ago,—as Committee on Practice,—and my report last year on "The Solution of Dental Problems," will upon learning the subject of my correspondence this year be convinced that I am a man of but one idea. It is far better, however, to be possessed of but one idea, if that be a good one, than to have none at all.

\*Printed in full in DENTAL COSMOS for April, 1902, p. 322.

Three years ago I wrote for this society over three hundred and fifty letters; last year the number was only ten, and this year only one letter was sent.

The letter written this year is as follows:

TO MR. ABRAM S. HEWITT, Chairman of the Board of Trustees and Executive Committee of Carnegie Institution, Washington, D. C.:

*Dear Sir,*—As Correspondent of the Dental Society of the State of New York, I presented to that body last year a report upon "The Solution of Dental Problems," in which it was brought out that the time had gone by when the solution of the many problems confronting us (*i.e.* those soluble by means of laboratory investigations) could be attained by unaided individual effort.

We have in our ranks many men who are earnest seekers after scientific truth, and who have done yeoman service to our profession by prolonged persistent laboratory experimentation. But these men have been hampered by lack of means to procure the necessarily expensive apparatus, and by lack of time,—for they are usually possessed of but small means and must earn their living while carrying on investigations.

To secure government aid for such work is hardly to be expected from our government, although, in the discussion of my report last year, government aid was spoken of as being desirable.

Having thus set forth very briefly our position, allow me to ask you as chairman of the Executive Committee and Board of Trustees of the Carnegie Institution, in the name of our Society and profession, to arrange matters, if possible, so that our young and vigorous profession shall be represented in that grand institution founded by Mr. Carnegie.

We are more closely allied to the medical profession than to any other, yet we touch nearly every art and profession at some point or points, drawing upon them all for facts and methods. Nevertheless, there are now, and always will be, distinctively dental problems, which must needs be solved by men who are or have been dental practitioners.

If it is possible for you to give me anything definite to report to our Society at its next meeting on May 14th, kindly do so, and thereby greatly oblige,

Yours truly,

HENRY D. HATCH, *Correspondent,*  
*Dental Society of the State of New York.*

March 19, 1902.

To this I received the following reply:

March 20, 1902.

*Dear Sir,*—On behalf of Mr. Hewitt I have the honor to acknowledge the receipt of your favor of yesterday, relative to co-operation and aid by the Carnegie Institution for the subject of dentistry. Your letter will be placed on file and referred to the appropriate committee when it shall have been formed.

Very truly yours,

MARCUS BAKER, *Asst. Sec'y.*

Also, a circular letter addressed

TO THE HEADS OF AMERICAN INSTITUTIONS, AND TO OTHERS INTERESTED IN THE WORK OF INVESTIGATION.

The Carnegie Institution sends to you herewith a copy of Mr. Carnegie's deed of gift and other information in respect to the organization of the new foundation.

Some of the ablest thinkers and investigators in the country have already called attention to important lines of inquiry. Their communications will be referred to special committees in different departments of knowledge, astronomical, physical, chemical, biological, geological, historical, archæological, philological, bibliographical, economical, etc., and the referees will be requested to add their own suggestions and to report to the Carnegie Institution such methods of procedure, and the names of such investigators, as they deem likely to advance with wisdom the great purpose of the foundation.

No large appropriations can be made at present, as there will be no income

from the fund before August. The summer will be chiefly devoted to a careful study of the problems of scientific investigation, at home and abroad, and in the autumn definite plans of procedure will be formulated.

Any member of the Executive Committee will be glad to receive from you, at any time, suggestions, opinions, and advice as to fields that the Carnegie Institution ought to occupy, and the best methods for carrying forward its work in those fields; but in order that important papers designed for official consideration, may be properly recorded and filed, they should be addressed to the President of the Carnegie Institution, 1439 K St., Washington, D. C.

DANIEL C. GILMAN, *Chairman*.

To the former letter the following reply was made:

April 21, 1902.

TO THE PRESIDENT OF THE CARNEGIE INSTITUTION:

*Dear Sir,*—Your letter of March 20th in reply to mine of the 10th received. Please advise me as to whether the committee you speak of will be formed and able to give me any assurance in time to communicate the same to the Dental Society of the State of New York, at its annual meeting, May 14th and 15th.

A committee might then be appointed to co-operate with a committee from the National Society, which meets in July at Niagara Falls. At the same time and place the National Association of Dental Faculties meets.

Representatives from these bodies could then confer with the proper authorities from the Carnegie Institution and agree upon the lines of work to be undertaken.

I am anxious to get the matter started so that it may grow with the growth and development of the Institution.

Thanking you for your prompt and courteous reply to my last letter, I remain

Very truly yours,

HENRY D. HATCH.

In answer to this the following letter was received:

*Dear Sir,*—Replying to your inquiry of the 21st, I beg to say that Dr. Gilman, president of the Institution, has gone abroad for the summer, and that meanwhile the Executive Committee are studying the matter of plans for carrying Mr. Carnegie's purposes into effect. This work is likely to involve careful study for some time; but it is hoped that plans will be ready for the trustees when they meet in the autumn. Meanwhile it is unlikely that any action will be taken respecting grants or co-operation.

Very truly yours,

MARCUS BAKER, *Asst. Sec'y*.

You are probably all familiar with the purposes of the institution, which are briefly as follows:

From the *Articles of Incorporation*:

The particular business and objects of the Institution are the promotion of study and research, with power—

(a) To acquire, hold, and convey real estate and other property necessary for the purposes of the Institution as herein stated, and to establish general and special funds;

(b) To conduct, endow, and assist investigation in any department of science, literature, or art, and to this end to co-operate with governments, universities, colleges, technical schools, learned societies, and individuals;

(c) To appoint committees of experts to direct special lines of research;

(d) To publish and distribute documents;

(e) To conduct lectures;

(f) To hold meetings;

(g) To acquire and maintain a library;

(h) And, in general, to do and perform all things necessary to promote the objects of said Institution.



Also, from the *Deed of Gift*:

Among its aims are these:

1. To promote original research, paying great attention thereto as one of the most important of all departments.
2. To discover the exceptional man in every department of study, whenever and wherever found, inside or outside of schools, and enable him to make the work for which he seems specially designed his life-work.
3. To increase facilities for higher education.
4. To increase the efficiency of the universities and other institutions of learning throughout the country, by utilizing and adding to their existing facilities and aiding teachers in the various institutions for experimental and other work in these institutions as far as advisable.

These being in part the purposes of the Carnegie Institution, it is evident that these purposes correspond with our needs to a marked degree.

To discover the exceptional man, or men,—those fitted both by nature and by training to do research work, and then to take from their minds the bread-and-butter question, and all the cares and worries incident thereto,—is one of the advantages to be gained by alliance with this institution.

We need, not only new research work done, but we need to have the work which has been done by individual workers carefully gone over, verified, and mistakes corrected. Let no one suppose that all the mysteries of nature are going to be made clear by this or any other plan. Knowledge is only relative. Every new discovery in science opens up a whole field heretofore unknown and unsuspected. Every area of light is surrounded by a zone of darkness. Neither need anyone suppose that knowledge can be bought like so much merchandise. The greater the sum total of human knowledge, the greater must be the effort of the individual to possess it.

Individuality, common sense, and good judgment will always be important factors in dental and medical practice. No one need fear that the putting of dental practice upon a truly scientific basis will interfere with his individuality or free moral agency.

In my report to this society three years ago I recommended that the society employ a chemist to the end that the exact formula of every filling material be known. We have been groping in the dark for all these years, led and misled by self-interested manufacturers, not one dentist in five thousand knowing of what his plastic fillings were composed.

A new cement has been put on the market recently and eagerly taken up by thousands of dentists, and the only information vouched us concerning its formula is that "it contains no oxid of zinc"!

Only this last winter one of our leading dentists in one of our leading societies of New York city arose and said that "he had used the powder of one of the old cements, with the liquid of this new cement, and that it had set in about the usual way." This led him to think that the claim that there was no oxid of zinc in the new cement was unfounded. No one present could throw more light on the subject, and it was passed. This incident is only quoted to show how we are floundering in a mass of excuseless ignorance.

Excuseless, because any analytical chemist could tell us, for a small fee, the composition of this or any other cement.

I think I hear some say that they do not care what the composition of a cement or alloy is, provided it does good work clinically. To any such I would submit the possibility of an occurrence like this: A firm is supplying you with alloy, with which you are perfectly satisfied. The firm splits. Each half claims to have the man who knows the secret of making the alloy, and each says the other knows nothing whatsoever of the secret, or of metallurgy or chemistry. You are a busy practitioner, and have not the time, even if you have the ability, to assay the two alloys. What will you do? Probably adhere to that firm which has sent out the smoothest-talking agent. Similar pictures might be drawn using mouth-washes, dentifrices, anesthetic mixtures, etc., as the subjects.

Gentlemen, this is all wrong, and is a stigma upon the fair name of our profession!

The above are only a few of the many problems which need careful investigation. Nor is the scope of the needs of our profession ever likely to reach a limit. There are new problems arising every year, every day. Instance the elaborate studies in human saliva of Michaels, Kirk, and others. This subject has suddenly loomed upon the dental and medical horizon as of importance hardly second to analysis of blood and urine. There is work enough in this field alone to keep a dozen of our best men employed for some time to come.

The importance of the X-ray for diagnostic purposes had hardly dawned upon us when we were called upon to look in the direction of the therapeutics of the X-ray, and another line of study was opened up.

In my report last year I went further than the year before, and urged that this society form a committee of investigation empowered to employ and supervise a chemist, a bacteriologist, etc. But, upon finding that the society was about eight hundred dollars in debt, the matter was dropped for the time.

And now here it is again, in a new and larger form,—this time with the hope of support from an institution backed by ten million dollars, and the best men in the country at its head.

Inasmuch as the board of trustees does not meet until autumn, nothing definite can be ascertained at present. The petition is on file, however, and in our judgment the matter should be backed up and urged by a committee from this society, co-operating with a committee from the National Society, the National Association of Dental Faculties, and other influential societies.

If it can be made to appear that we are a body of earnest scientific men, and not mere money-makers and tinkers, there is not much doubt but that we will secure recognition and support from the Carnegie Institution.

Respectfully submitted,

HENRY D. HATCH, D.D.S.,  
35 West Thirty-eighth St., New York, N. Y.

*Discussion.*

Dr. HOFHEINZ. A report of such novel ideas deserves a great deal more time than has been given to me to discuss it. It was about six or seven years ago that the proposition was made in the State Society, I think by Dr. Ottolengui, or by myself, that dentists ought to contribute to create a fund, the interest of which could be used to support such men as Dr. Black. Dr. Black was at the meeting that year, and read one of his famous papers on amalgam. I am extremely sorry all these efforts have proved in vain.

When Dr. Hatch read his paper last year, the question of governmental aid was discussed, and I spoke on it very forcibly, because I have seen in other countries what governmental aid has done in regard to the advancement of scientific experiments; but it is very unfortunate that our political institutions will not permit of it, nor our municipal authorities, because as a rule they do not have very much money on hand for such purposes. So we must rely on private aid.

I regret that the forty thousand dentists in this country could not have been induced to contribute from one to five dollars each, to create a fund which would be ample enough to give us an income to assist such men as we must have to do this labor. Men who at the present time have to carry on a daily practice would receive stimulation which is necessary to do that amount of scientific labor from which we all benefit,—a scientific labor which is the most lofty one that dentists or medical men, or any others, can possibly do.

Dr. OTTOLENGUI. I only want to say that I am both surprised and pleased to find that Dr. Hofheinz is my twin brother in this matter. My recollection is that Dr. Hofheinz suggested at that time that this society should vote a contribution to a fund which had been suggested by Dr. Kells, of New Orleans, and editorially approved by Dr. Kirk in the *Cosmos*, and there was a proviso that the amount should be given when the whole fund should be collected. I rose and moved, instead, that we should donate a specified amount immediately for a specific object by a specific man. My resolution was voted down, and my twin brother's resolution was carried; and I then stated that it was merely a vote of sentiment,—that the money would never be asked for.

Dr. JARVIE. It seems to me there can be but one sentiment in regard to this paper, especially that part of it in which Dr. Hatch tells us that he has applied to the Carnegie Institute at Washington for a department for original dental research. While propositions have been before this society and other societies, and before the dental profession in general, for years, as to the best means of instituting and carrying out original research on dental subjects, this seems to be the most practical direction in view at the present time, for it would seem that this Carnegie Institute is to be an established fact, and as they have not yet determined exactly what topics are to be followed in the investigation, it would seem that this was a very good time to press the claims of dentistry. I cannot think of any other profession, of the various ones mentioned, that



has a better claim upon such an institution than dentistry. I would like to see some resolution adopted indorsing all that Dr. Hatch has done in this direction, and urging that the claims presented be kept before the Carnegie Institution at Washington and pressed to a successful termination. I think it can be done, and I do not believe it can come at the present time from any better organization than the Dental Society of the State of New York. The national associations do not meet until well on in the summer, and as from the communication from the Carnegie Institution we learn that they are making plans to be presented early in the autumn, I think this is the time to press our claims while their plans are yet in a formative state.

The PRESIDENT. If you have a motion to make in this connection, the chair would suggest that it be put in writing, so that it may come up for action at this or the next session.

Dr. JARVIE. After consultation with Dr. Hatch we will formulate a resolution, and have it presented later in the meeting.

Dr. CARR (discussing the Correspondent's Report). I was very much impressed with the paper of our Correspondent, and it seems to me if we had something tangible to present to this committee, to show we were doing something, it would have a better effect. I am going to make a motion that we raise \$1000 in this society, to give to Dr. Hatch to conduct some practical investigations. I will give \$100, provided the rest of the \$1000 be raised.

Dr. OTTOLENGUI. This society voted some money that was never called for, and now the society has none; I hope the members individually have. I have never been much at raising money myself, but I dislike to see that \$100 of Dr. Carr go by, and I am afraid it will unless we act at once. I am going to take the liberty of asking the gentlemen what they will donate, to see if we cannot raise the money right here.

Within a few minutes, the sum of \$1005 was raised, the following gentlemen contributing as stated:

*Donations of \$100.*—Wm. Carr, New York; Wm. Jarvie, Brooklyn; John I. Hart, New York; R. H. Hofheinz, Rochester.

*Donation of \$50.*—M. L. Rhein, New York.

*Donations of \$25.*— — Rich, Saratoga; R. Ottolengui, New York; S. L. Goldsmith, New York; F. W. Keppy, Brooklyn; — Campbell; — Wright, Troy; W. C. Deane, New York.

*Donations of \$10.*—W. A. White, Phelps; — Low, Buffalo; E. Hillyer, Brooklyn; — Hanning, Brooklyn; H. D. Hatch, New York; — McDougall; — Reffson; H. C. Ferris, Brooklyn; S. B. Palmer, Syracuse; — Huvier; — Inglis; — Messerschmidt; F. French, Rochester; — Kennedy; W. J. Turner, Brooklyn; O. J. Gross, Schenectady; A. R. Cook, Syracuse; — Foulds; — Young; — Eschelman; C. F. Ash, Brooklyn; F. L. Ames, Albany; — Hamlet, Brooklyn; — Saunders; — Hepburn; — Bachman; C. F. Dubois, New York.

*Donations of \$5.*— — Gyle; R. G. Hutchinson, Brooklyn; H. Gould, Brooklyn; — Sandhusen, Brooklyn; — Royce; — Frazer; — Demarest, Glens Falls; — Burns, Rochester; — Stainton, Buffalo; W. D. Tracy, New York; B. C. Nash, New York; — Dunn, New York; A. L. Swift, New York; — Willis; F. C. Walker, Brooklyn; — Bulkley, Liberty; — Fossume, New York; — Degenhart; A. G. Lansing; — Benz; — Slocum, Oswego; — Adams.

TOTAL, \$1005.

On motion by Dr. Carr, Dr. Hatch was made special treasurer of this fund.

Dr. HATCH (in closing discussion). To say that I am gratified at the enthusiastic reception of my report would not express my feelings upon the subject; to say that I am overwhelmed would come nearer expressing it. This action upon the part of the society and its individual members comes like a thunderclap out of a clear sky, and for the moment I feel dazed, and feel like asking for time to think; in fact, I propose to take time, in order to make the most of the situation. My mind is perfectly clear, however, on two or three procedures which ought to be consummated at once:

*First.* Let us not lose sight of the main issue, which is to get the Carnegie Institution at Washington, D. C., to include our profession in its foundation plan, which is to be laid in the autumn. The matter should be made national in its scope, and to effect this a committee should be sent to the National Society to secure the support of this body in furthering this end.

*Second.* I should like to be empowered to hold in reserve the major part of the fund which has been raised, pending the action of the board of trustees of the Carnegie Institution, so that in case we should be asked to show our sincerity and earnestness by giving a small sum to secure the larger grant, the fund would be available for that purpose.

*Third.* Allow me to express the hope that a new standing committee will be created in this society, namely, a Committee on Scientific Work and Investigation, and that the funds collected to-day will form the nucleus of a permanent fund to be devoted to the purposes of scientific investigation and research work.

Dr. JARVIE. In regard to this report that has just been presented, I would say that we have had several conferences together, and the understanding that we arrived at was this: that some of this fund should be used at once for the purpose of carrying out original research, and that work should begin now. That was primarily what this amount of money was raised for. It would not necessarily use all the money for that purpose; the remainder would be kept for the purpose that Dr. Hatch has suggested, probably to be used in connection with this Carnegie Institution,—to show we had raised money and were already doing work, and asked their assistance.

Another point is this; that this piece of work was started in this society,—the Dental Society of the State of New York. While we would ask the co-operation of the National Association, we would not be lost in any shuffle,—that it should still be the work of New York State. In an organization as large as the National Association, a communication from this body on this subject might be lost or pocketed, and receive no response. We do not propose to let this subject drop through any such condition of affairs. The intention is to push this matter, and I think that Dr. Hatch would like to have an advisory committee of two other gentlemen added

to the committee of one, for the furtherance of this matter. The appointment of a committee it would be well to do now.

Dr. BURKHART. I move that Dr. Carr and Dr. Jarvie, together with Dr. Hatch, be made a committee for the carrying out of this plan. (Motion carried.)

---

#### ELECTION OF OFFICERS.

At the annual meeting of the New York State Dental Society held at the Hotel Ten-Eyck, Albany, New York, May 14 and 15, 1902, the following officers were elected for the coming year: R. H. Hofheinz, Rochester, president; W. J. Turner, Brooklyn, vice-president; W. A. White, Phelps, secretary; C. W. Stainton, Buffalo, treasurer; H. D. Hatch, New York, correspondent.

W. A. WHITE, *Sec'y*,  
Phelps, N. Y.

---

#### MISSOURI STATE DENTAL ASSOCIATION.

At the last annual meeting of this association, held at Jefferson City, May 21, 22, and 23, 1902, the following officers and committees were elected: S. C. A. Rubey, Clinton, president; J. H. Kennerly, St. Louis, first vice-president; F. W. Franklin, Kansas City, second vice-president; Otto J. Fruth, St. Louis, corresponding secretary; H. H. Sullivan, Kansas City, recording secretary; J. T. Fry, Moberly, treasurer. Board of Censors—A. M. McGee, Louisiana; R. J. Winne, Bolivar; W. M. Bartlett, St. Louis. Committee on Ethics—A. J. Prosser, St. Louis; W. H. Renoe, Fulton; J. B. McBride, Springfield. Publication Committee—Wm. Conrad, St. Louis; W. G. Goodrich, Chillicothe. Committee on History—Burton Lee Thorpe, St. Louis. Committee on Inventions and New Appliances—Sam T. Bassett, St. Louis. Committee on International Dental Congress during Louisiana Purchase Exposition—Wm. Conrad, M. C. Marshall, Burton Lee Thorpe, F. F. Fletcher, Hermann Prinz, W. M. Bartlett, Leo Gregory McKellops.

The next annual meeting will be held at Kansas City, Mo.

OTTO J. FRUTH, *Cor. Sec'y*.

---

#### ILLINOIS STATE DENTAL SOCIETY.

At the annual meeting of this society, held at Springfield, May 13, 14, and 15, 1902, the following officers and committees were elected for the ensuing year: A. H. Peck, Chicago, president; W. E. Holland, Jerseyville, vice-president; Hart J. Goslee, Chicago, secretary; C. N. Johnson, Chicago, treasurer; J. T. Cummins, Metropolis City, librarian. Committee on Science and Literature—G. V. Black, Chicago. Committee on Art and Invention—L. S. Tenney, Chicago. Board of Examiners—C. B. Sawyer, Jacksonville. Committee on Ethics—E. A. Royce, Chicago; G. E.



Warren, Pontiac; E. F. Hazell, Springfield. Supervisor of Clinics—C. P. Pruyn, Chicago. Executive Committee—Charles J. Sowle, Rockford. Members of Executive Council—E. K. Blair, Waverly; D. M. Gallie, Chicago; O. M. Damude, Monmouth. Publication Committee—Hart J. Goslee, chairman; D. M. Cattell, Chicago; G. W. Dittmar, Chicago. Local Committee of Arrangements—F. H. McIntosh, J. B. Brown, G. D. Sitherwood, all of Bloomington, which city was selected as the next place of meeting.

### SOCIÉTÉ ODONTOLOGIQUE, PARIS.

THE following have been elected officers of this society: Dr. Hivert, president; Dr. Rodolphe, vice-president; Dr. Siffre, secretary-general; Dr. Fontanel, annual secretary; Dr. Neech, foreign secretary.

### GEORGIA STATE DENTAL SOCIETY.

THE thirty-fourth annual session of the Georgia State Dental Society has just adjourned to hold its next meeting at Tallulah Falls, Tuesday, June 9, 1903.

The following officers were elected: J. M. Mason, Macon, president; S. D. Rambo, Marietta, first vice-president; J. M. Whitehead, Vienna, second vice-president; H. A. Lowrance, Athens, treasurer; S. H. McKee, Americus, recording secretary; O. H. McDonald, Atlanta, corresponding secretary; W. H. Weaver, La Grange, editor *Dental World*. Executive committee—Geo. S. Tigner, Atlanta, chairman; Geo. T. Gurr, Waverly Hall; C. Z. McArthur, Fort Valley; C. Whittington, Valdosta; M. N. Mixon, Rome.

## DENTAL COLLEGE COMMENCEMENTS.

### COLUMBIAN UNIVERSITY, DENTAL DEPARTMENT.

THE annual commencement exercises of the Dental Department of the Columbian University were held in the National Theatre, Washington, D.C., on Wednesday, June 4, 1902.

The annual address was delivered by Dr. Deale.

Dr. Greene, president of the faculty, conferred the degree of D.D.S. upon the following graduates:

Wm. C. Barr.....Illinois.	Carl J. Mess..... Indiana.
Fred'k I. Bartlett..Dist. of Columbia.	Paul H. Miller.... Dist. of Columbia.
Samuel T. Browne Illinois.	John C. Murdoch.. Illinois.
Arthur B. Cooper. Dist. of Columbia.	W. Ashford Reiss. Dist. of Columbia.
Geo. W. Cox, Jr...Dist. of Columbia.	Thos. L. Rust..... Virginia.
Benj. C. Jones.....Virginia.	Henry P. Stevens. Pennsylvania.
Robt. E. Layton... Maryland.	Walter Watts..... Maryland.

## DETROIT COLLEGE OF MEDICINE, DENTAL DEPARTMENT.

THE annual commencement exercises of the Dental Department of the Detroit College of Medicine took place at the Detroit Opera House, on Thursday, June 12, 1902.

The annual address was delivered by Rev. Lee S. McCallister. The valedictorian was A. J. Thieler, D.D.S.

The degree of D.D.S. was conferred upon the following graduates:

Chas. H. Atkins.	Jas. P. Hickey.	N. G. Nicholson.
Chas. F. Adams.	John S. Jackson.	Jay F. Pool.
Jacob Burrows.	Wm. H. Lehman.	T. Wm. Parrott.
Theo. R. Buttrick.	Archie D. Leitch.	Samuel H. Robbe.
Geo. E. Byerly.	Chas. E. Mabley.	Wm. A. Richardson.
Wm. A. Bryanton.	Cortland M. Major.	F. Edwin Scott.
Delbert L. Cole.	Angus L. McPhee.	Howard C. Stuart.
Thos. C. Cannon.	Ross G. MacKenzie.	Robt. McK. Smith.
Fred'k G. Crawford.	Wm. J. Meier.	Ford E. Smith.
W. Barratt Clayton.	Claude Moore.	Jno. L. Tooker.
Wilkie Collins.	Jos. W. McQueen.	Arthur J. Thieler.
Manley S. Dullam.	Arthur D. MacVicar.	Fred H. Woodbridge.
Hervy L. Dodge.	Chas. W. Miller.	Roy O. Woodruff.
Roy S. Ellis.	J. Clarke Morrison.	Jacob W. Welz.
Henry J. Fortain.	A. Wesley Merritt.	Louis Webber.

## UNIVERSITY OF SOUTHERN CALIFORNIA, COLLEGE OF DENTISTRY.

THE commencement exercises of the College of Dentistry, University of Southern California, Los Angeles, were held at the Simpson Auditorium, Thursday, June 12, 1902.

Fourteen were graduated of a class of eighteen, as follows:

Emmer B. Arnold.	Edgar D. Hiller.	Walter E. Schott.
Ygnacio R. Carrillo.	T. Houston Lowers.	Will E. Sibley.
George A. Comte.	Wm. B. Mason.	Minnie M. Steinhilber.
John W. Gray.	George E. Mosher.	Edwin B. Van Wormer.
Charles C. Heller.	Ralph W. Nelson.	

## COLORADO COLLEGE OF DENTAL SURGERY.

THE fifteenth annual commencement exercises of the Colorado College of Dental Surgery, Dental Department University of Denver, were held in Denver, Col., on Monday, May 19, 1902.

The degree of D.D.S. was conferred upon the following graduates:

Joao S. Albergaria.	Geo. W. Dowden.	E. Vincent Shadomy.
Guy F. Baker.	Oliver J. Graham.	Ernest E. Yocum.
Wm. O. Brubaker.	Alice M. Ground.	Geo. M. Smith.
Walter T. Cain.	Jas. M. Hannahs.	Woodford L. Tilley.
Harry E. Caywood.	Normal N. Wycoff.	Geo. F. Tilton.
Atlantic Christensen.	Jno. J. O'Neill.	Lester C. Wheeler.
Edgar J. Craine.	Elijah F. Rathbun.	Walter H. White.
Edw. X. Dias.	John C. Scott.	Herman L. Wortman.

### WESTERN DENTAL COLLEGE.

THE twelfth annual commencement exercises of the Western Dental College were held in the High School auditorium, Kansas City, Mo., on Wednesday, April 30, 1902.

The annual address was delivered by Rev. W. A. Quayle.

Prof. D. J. McMillen, M.D., D.D.S., conferred the degree of D.D.S. upon the following graduates:

J. L. Allison.	L. M. Hamman.	F. A. Phillips.
G. W. Boyer.	Claude B. Hanks.	McF. Price.
W. H. Burgess.	Loy E. Harris.	M. N. Putnam.
Geo. C. Burrows.	Joel E. Hawley.	G. N. Raffington.
Elwin Cary.	John L. Hemley.	Asa J. Ridgeway.
T. T. Cater.	Hart D. Holt.	S. B. Riggs.
A. D. Chapman.	H. E. Lancaster.	R. J. Rinehart.
W. G. Cheney.	L. D. Leslie.	L. N. Rudy.
A. W. Coppersmith.	R. S. Love.	M. A. Schooley.
R. S. Coulter.	J. E. Marsteller.	C. O. Scott.
C. W. Davison.	And. B. McBride.	Glenn S. Smalley.
C. O. Davis.	H. M. McFarland.	J. A. Teague.
Clarence Dicus.	Otis McMillen.	C. D. Tharp.
M. R. East.	S. P. Miller.	Jas. L. Thayer.
G. S. Ewing.	H. Z. Moore.	Geo. W. Webb.
D. R. Finley.	C. L. Moore.	F. B. Weir.
Ora O. Fousch.	H. J. Morrison.	L. E. West.
W. N. French.	J. D. Musgrave.	J. F. White.
W. L. Gemmel.	A. B. Newland.	G. M. Wolf.
M. W. Golladay.	Gilbert A. Nichols.	H. I. Wood.
Wes. Grantham.	C. A. Noland.	J. P. Woods.
W. O. Halderman.	G. E. Pendarvis.	W. H. Woods.

### NATIONAL UNIVERSITY, DENTAL DEPARTMENT.

THE eighth annual commencement exercises of the Dental Department of the National University, Washington, D. C., were held on Friday evening, May 30, 1902.

The address to the graduates was delivered by Prof. Noble P. Barnes, M.D. The valedictorian was Jas. R. Armstrong, D.D.S., M.D.

The degree of D.D.S. was conferred upon the following graduates:

A. J. Arbeely, M.D..	Damascus, Syria.	Jas. M. McDonald.....	New York.
Chester A. Baker..	Dist. of Columbia.	Cadmus L. Odor.....	Ohio.
Siegfried O. Graser.	Michigan.	Henry J. Warren.....	New York.

### NORTHWESTERN UNIVERSITY DENTAL SCHOOL.

THE annual commencement exercises of the Northwestern University Dental School were held at Music Hall, Chicago, on Thursday afternoon, May 1, 1902.

The doctorate address was delivered by Edmund Andrews, A.M., M.D., LL.D. The valedictorian was Augustus Bentley McVay, D.D.S.

The degree of D.D.S. was conferred by Prof. Edmund J. James, president of the university, upon the following graduates:



Arthur G. Adams.	Mont R. Gilchrist.	Wm. Nelson.
Maxwell S. Allan.	John H. Gill.	Chas. H. Niswander.
Richard J. Allison.	Howard E. Gordon.	John D. O'Brien.
Josiah W. Baker.	Edw. L. Griffith.	Jos. S. Opland.
Emmor S. Bales.	Geo. O. Goodman.	David T. Parkinson.
Louis L. Ballou.	Alfred A. Guerne.	Pearl Parks.
Henry E. Barber.	Chauncey J. Hadley.	Robt. S. Parks.
Clifford H. Bascombe.	Frank A. Haffa.	Henry E. Piner.
Henry Baumgarth.	T. Devereaux Hall.	Oscar M. Polin.
John W. Behm.	Roscoe B. Hammond.	Wm. M. Pollock.
J. Rex Bell.	Herbert H. Hancock.	Hardy F. Pool.
Hugh T. Berkey.	John J. Hardie.	Geo. C. Poundstone.
Joseph B. Bilek.	Dr. Sara Harris.	Fred. O. Price.
Raymond L. Bixby.	Ira P. Hayes.	Wm. O. Proctor.
Gertrude R. Bliss.	Wilbur J. Hemphill.	Elmo D. Reese.
Anna B. Blount.	Sidney Headley.	Chas. S. Reichert.
Edwin M. Blumenthal.	Jno. E. B. Hess.	Wm. F. Richards.
Ernest E. Bohrer.	Wm. H. Hicks.	Jos. H. Ritson.
Geo. W. Bollenbach.	Jennie E. Himes.	Chas. W. Sanford.
Vinton V. Bolster.	Hugh W. Hodge.	John E. Shill.
John L. Bond.	Herbert R. Howell.	Abe L. Shless.
Fred. J. T. Borchers.	Chas. R. Hoxie.	Henry M. Silverberg.
Derward J. Boyd.	Lewis Hullhorst.	Jens J. Sinn.
Carl R. M. Brandt.	Geo. C. Jennings.	Daniel H. Smith.
Claude Brant.	John P. Jones.	George H. Smith.
James S. Brown.	Chas. E. Johnson.	Edw. A. Spencer.
Chester L. Burrill.	Elmo H. Kaser.	Ernest A. Spier.
Louis F. Bouche.	David H. Keller.	Thos. H. Spindlo.
Chas. W. Bushnell.	Geo. A. Kennedy.	Wm. R. Stanley.
Wm. E. H. Caldwell.	Ronald B. Kenyon.	Wirt A. Stevens.
Jos. E. Callow.	Jos. F. Kernan.	John F. Stokes.
Peter A. Campbell.	C. J. B. Kitchen.	Geo. O. Swigert.
Ralph S. Childs.	Louis C. Kleinecke.	David E. Thomas.
Lewis P. Colborn.	Eugene S. Landess.	Edw. S. Thomas.
Roy V. Constable.	Albert L. Lane.	Lewis E. Thomas.
Plenna R. Copple.	Herman Lasker.	Edwin C. Thompson.
Jas. C. Corbett.	Jos. S. Lippert.	Ray L. Tower.
B. J. Corbin.	R. E. McAllister.	Carl A. Tucker.
Wm. M. Cory.	Fred. W. McCallum.	Alva D. Tyler.
John R. Cromb.	Glenn A. McMaster.	Stanley J. Uglow.
Chas. E. Davis.	Earl E. McStay.	Oliver M. Ulvestad.
Michael J. Dorothy.	Aug. B. McVay.	John B. Vaughan.
James M. Dryden.	Egbert E. Macpherson.	Wm. M. Waddell.
Thos. M. Dupuy.	Eugene Maginnis.	Harold T. Weaver.
Chas. D. Eaton.	Wm. H. Malony.	Wm. A. Weir.
Arthur J. Ellis.	Geo. A. Matheson.	Henry T. Weyhe.
Wm. H. Ellis.	Nellie E. Maurer.	Chas. O. Wilbur.
Geo. L. Engel.	Frank A. Michalski.	L. F. Wildermuth.
Frank E. Fisher.	Frank A. Mever.	Fred H. Williams.
Jas. C. Fleming.	Lewis M. Miller.	Leonard A. Williams.
Chas. G. Foster.	Harry L. Minnis.	Edwin F. Wolfe.
Clark A. Fuller.	George R. Moody.	Geo. Zederbaum.
Thos. F. Galligan.	Lorenza A. Mullican.	Horace A. Ziegler.
Emil D. Geiger.	Frida E. Mueller.	Henry T. Zimmermann.
Harry A. Gilchrist.	Robt. H. Munson.	

### MEDICO-CHIRURGICAL COLLEGE, DENTAL DEPARTMENT.

THE annual commencement exercises of the Dental Department of the Medico-Chirurgical College, Philadelphia, Pa., were held in the American Academy of Music, Philadelphia, on Saturday, May 24, 1902.

The annual address was delivered by Rev. John Howard Harris, D.D., LL.D.

The degree of D.D.S. was conferred upon the following graduates:

H. S. Birkinshaw.....	Pennsylvania.	Wladimir W. Lutz.....	Russia.
J. K. Brallier.....	Pennsylvania.	Peter A. McAneny....	Pennsylvania.
Chas. C. Bristow.....	Pennsylvania.	Edward J. Mead.....	New York.
H. F. Campbell.....	Pennsylvania.	Abr. E. Muchnic.....	Pennsylvania.
Howard E. Cupitt.....	Pennsylvania.	Daniel M. Powers....	New York.
Chas. F. Dull.....	Pennsylvania.	John J. Russel.....	Pennsylvania.
David Epstein, M.D....	Germany.	J. Joseph Ryle.....	Connecticut.
Jacob C. Field.....	Russia.	J. F. Sanderson.....	Pennsylvania.
Ernest C. Halliday....	Canada.	Imly Sharpe.....	New Jersey.
Wm. Hayday.....	Pennsylvania.	Samuel S. Smith.....	Pennsylvania.
Martial W. Hayes.....	Pennsylvania.	Wallace B. Stewart....	Pennsylvania.
Elmer E. Henry.....	Pennsylvania.	W. H. Stover, B.E....	Pennsylvania.
Jas. D. Husted.....	Pennsylvania.	Albion C. Tollinger...	Pennsylvania.
Jos. F. Langlois.....	Massachusetts	Leslie J. Van Derpool.	New York.
Edw. C. Lloyd.....	Pennsylvania.	Conrad J. Weisenburn.	Pennsylvania.
Burdette G. Love.....	Pennsylvania.	Jac. L. Zimmerman...	Russia.

### NORTH PACIFIC DENTAL COLLEGE.

THE annual commencement exercises of the North Pacific Dental College were held in the First Baptist Church, Portland, Ore., on Wednesday evening, April 30, 1902.

The annual address was delivered by Hon. Geo. H. Williams. The valedictorian was Wilbur Norton Pintler, D.D.S.

The degree of D.D.S. was conferred upon the following graduates:

Jas. T. Allen.	Ralph Hutchison.	Chas. A. Rambo.
Robt. W. Anderson.	Harvey E. Kely.	Eugene C. Rossman.
Geo. S. Barrett.	George Larkin.	Rey S. Stryker.
Hugh H. Bowlby.	Kinzo Moriyama.	Jno. W. N. Shepherd.
Fred F. Boody.	Alice M. Magilton.	Lizzie C. Stewart.
Everett E. Bailey.	Ernest C. Macy.	Wallace C. Shearer.
Herbert E. Barrett.	Wm. L. Martin.	Peter J. Sharp.
Ernest J. Doty.	Nathan R. Norris.	Newell L. Smith.
Virgil L. Dimmick.	Gustavus M. Osterberg.	Donald B. Stuart.
Curtis Egbert.	Wilbur N. Pintler.	Burt R. Stevens.
Samuel A. Fulton.	Charles P. Poston.	Frank H. Walgamot.
Francis J. Friedrich.	Herbert W. Pugh.	Jas. H. Webster.
George Glaze.	D. Franklin Pyle.	Marlott A. Winningham.
Roy G. Haskell.		

### UNIVERSITY OF PENNSYLVANIA, DEPARTMENT OF DENTISTRY.

THE one hundred and forty-sixth annual commencement exercises of the University of Pennsylvania were held in the Academy of Music, Philadelphia, Wednesday, June 18, 1902.

The commencement oration was delivered by Nicholas Murray Butler, LL.D., president of Columbia University.

The degree of D.D.S. was conferred by Chas. C. Harrison, LL.D., provost of the university, on the following graduates:

Clarence E. Abbott..	Massachusetts.	Chas. M. Kauffmann..	New York.
Ralph W. Babcock..	Kansas.	Harry A. Kramer....	Pennsylvania.
John M. Baum.....	Pennsylvania.	George I. Laing.....	New Jersey.
Charles J. Berrick...	New York.	N. H. Laughlin.....	New York.
Leon T. Bingham...	New York.	Arthur E. Lebo.....	Pennsylvania.
Daniel Blair.....	Scotland.	Hervey P. Lees.....	Rhode Island.
Wm. H. Bolton.....	Maine.	G. S. B. Leonard.....	Connecticut.
Frank B. Bostwick..	Ohio.	Wm. E. Lowe.....	England.
Arthur C. W. Bowen	Rhode Island.	H. W. Lummis.....	New Jersey.
Richard S. Brenton..	Pennsylvania.	Jno. P. McLachlan...	Canada.
Roy F. Brode.....	Pennsylvania.	Wm. J. McLaughlin..	Connecticut.
Wm. Burrows, Jr....	Pennsylvania.	G. R. Machado.....	Jamaica.
Paul R. Byerly.....	Pennsylvania.	G. J. Machado.....	Jamaica.
Geo. W. Cairolis....	Connecticut.	Robert Macleay.....	Scotland.
John G. Clayton....	Australia.	Walter L. Mancill...	Pennsylvania.
James G. Clune.....	Pennsylvania.	El Dorado Manley...	Pennsylvania.
Samuel W. Collin...	Pennsylvania.	Geo. P. Marvin.....	New York.
C. G. Comegys.....	Texas.	Wm. B. Mausteller...	Pennsylvania.
Horace C. Cope.....	Pennsylvania.	Chas. C. Mehler.....	Pennsylvania.
John W. Corderman	Kentucky	Ashbel F. Meserve...	Illinois.
Geo. W. Crowell...	New York.	Edwin S. Metzger...	New York.
Horace M. Cumbler.	Pennsylvania.	Clive W. Montfort...	New York.
Wm. W. Daniel.....	Texas.	Chas. L. Moore.....	New Jersey.
David P. Deatricks..	Pennsylvania.	Guido Müller.....	Switzerland.
Leverett C. De Land	New York.	Allan M. Newman...	Rhode Island.
Harvey S. De Witt..	New York.	Harry B. Ogden.....	New York.
Wm. H. Diller.....	Pennsylvania.	José Pereda.....	Mexico.
Harry L. Dorrell...	England.	Harold G. Perkins...	England.
W. E. Drumbheller...	Pennsylvania.	Henry H. Peter.....	Pennsylvania.
Robert M. Dunlap...	Pennsylvania.	M. E. A. Pflüger....	Germany.
Eugene B. Eaton....	Canada.	Elias B. Prentiss...	New York.
Earl C. Fairweather.	Wisconsin.	Walter G. Price.....	Canada.
Leo N. Fischer.....	Pennsylvania.	Wm. A. Roberts.....	Pennsylvania.
Thomas H. Fitchie.	Ireland.	Georges G. Robin....	France.
T. P. Flanagan.....	Massachusetts.	Matthew F. Ronan...	Canada.
Arthur H. Fleming...	North Carolina.	Harry D. Saylor.....	Pennsylvania.
Henry Fowler.....	Arizona.	Edw. M. Schultz....	Pennsylvania.
Richard C. Fowler...	Arizona.	C. M. Scripture.....	Connecticut.
James W. Freas.....	Pennsylvania.	Jos. A. Sheehan.....	Pennsylvania.
Charles M. French...	Canada.	Milton L. Simon.....	New York.
Anton H. Gaede.....	Pennsylvania.	John G. Singer.....	Canada.
Daniel S. Gardner...	Pennsylvania.	Claude M. Smith....	New York.
Matthew H. Garvin...	Canada.	Frank W. Smith....	Pennsylvania.
Charles S. Geary...	Pennsylvania.	Theo. P. Snook.....	New York.
H. C. Glendining...	New Zealand.	H. D. Spangenberg...	New Jersey.
John H. Goodwin...	Massachusetts.	Otto J. Specker.....	Canada.
Jehu T. Gore.....	Pennsylvania.	John A. Standen....	Pennsylvania.
George W. Graham...	New Jersey.	Jos. S. Stevenson...	Maryland.
Arthur Haas.....	New York.	E. E. Stillman.....	New York.
Wm. G. Hanrahan...	New Jersey.	R. H. W. Strang.....	Connecticut.
Charles E. Heald...	Pennsylvania.	H. C. D. Taunton...	Australia.
Arthur E. Healy....	Connecticut.	John F. Teufert....	Germany.
George G. Herr.....	Connecticut.	O. B. Townshend...	New Zealand.
Clarence H. Hertz...	Pennsylvania.	H. W. Van Buskirk...	New Jersey.
Edgar D. Hinkle...	Pennsylvania.	J. S. Van Valkenburgh	New York.
John H. Hinton....	England.	R. H. Van Valkenburgh	New York.
George W. Hobby...	New York.	G. V. W. Voorhees...	New Jersey.
Robert H. Ivy.....	China.	Leon T. Wasley....	Pennsylvania.
George C. Jewell...	Illinois.	Daniel H. Wetzel....	Pennsylvania.
Archer Jordan.....	Maine.	G. A. Wilson, Jr....	New York.
Walter E. Joslyn...	New York.	Oscar Zimmerman...	Pennsylvania.

NOTE.—Elmer Stauffer Ritter, Pa., and Harry Davis Winsmore, Pa., though having met all requirements, were not graduated, their diplomas being withheld for attainment of legal age.



## EDITORIAL.

## DENTISTRY AND THE CARNEGIE FUND.

WE print elsewhere in this issue a report of the Correspondent of the New York State Dental Society, and we desire to direct particular attention to it because of its unique character, and the important feature which it embodies.

The importance of the Carnegie foundation for original research can scarcely be overestimated. No such agency having a direct bearing upon the advancement of science through the results of original research has ever been created heretofore, and the indications, from the character of the initial organization for the administration of the fund, are that it will be wisely and judiciously applied to the ends for which it was created.

It is not only natural, but extremely fitting, that dentistry should be a beneficiary of the Carnegie fund. Those who are familiar with the importance of the problems with which dentistry is concerned, and the bearing which they have upon human health and life, can have no doubt of the propriety of affiliating dentistry with those departments of human inquiry which it is the purpose of the Carnegie fund to promote. The matter of clearly convincing the administration of the rightfulness of such a claim may present some difficulties which it will require most careful presentation to overcome; and, before we can hope to attain such a desirable end it is necessary that we clearly comprehend not only the uses to which the desired financial aid are to be put, but that we understand with equal clearness how the money intended for such a purpose may be successfully used.

The belief that the results of scientific research can be bargained for, and, as it were, paid for in advance, is by no means uncommon; that it is only necessary, for example, to lodge a prepaid order with the scientific man for a definite amount of research work, with the expectation that the result is sure to follow. That is a fundamental error. The work of the true scientific investigator is a labor of love absolutely and exclusively. When it is less than that, it by that degree falls short of being truly scientific work. The love for investigating the truths of nature can no more be purchased or subsidized than can filial affection. The researcher who undertakes original work for a price, does so literally for the price, and not for the love of discovering the truth. It is therefore necessary in administering a fund to be devoted to promotion of scientific research that these fundamental principles be borne in mind.

Financial assistance should in no case be offered to any worker who has not already demonstrated that he is capable of doing valuable research work without outside financial assistance, and whose character as a scientific man is beyond suspicion of financial greed, —a man who loves the truth better than money. Only such can be the proper recipients of the financial assistance which it is the purpose of the Carnegie foundation to render.

In furtherance of the suggestion embodied in the report of its Correspondent, a goodly number of members of the Dental Society of the State of New York contributed in a few minutes for scientific research work a sum aggregating over one thousand dollars.

We have no reason to doubt that those of the society who have so enthusiastically and so practically manifested their desire to promote scientific research in dentistry hold any other view than that here outlined. We have here directed attention to these fundamental principles in order that they may not be forgotten, but constantly kept in view while the movement goes on, as we trust it will, to a successful issue. What gives us cause for much gratification in this connection is that a dental organization has been found having so large a proportion of its membership imbued with a desire to promote dental scientific research, and, as practical evidence of the fixed, earnest character of their desire, to contribute so handsomely toward the furtherance of that end. It is a hopeful sign of the higher development of our profession that its thinking men have come to realize not only the importance, but the necessity of scientific research in connection with dentistry.

The few original thinkers and investigators in our profession, who have for years labored without hope of reward and without financial aid in uncovering the scientific data upon which a rational practice of dentistry can alone be built, must hail with joy the awakening which is manifested by the recent action of the Dental Society of the State of New York, which can only be interpreted as a sympathetic appreciation of their labors and an encouragement to their endeavors. We trust that the movement thus initiated will be the nucleus of a general growth which shall stimulate in time further action of the same kind in dental subjects everywhere. No expenditure of money could be made which would yield such large returns in good results valuable to the whole profession.

The example set by the Dental Society of the State of New York is one which should and does mark one of the most important actions in the history of the profession. First, because of the practical good the fund established by the action of the society must produce; but in a larger sense because it is an indication of the

awakening of the minds of practitioners to the fact that empiricism in dental practice is no longer a sufficient basis upon which to found a successful practice, and that scientific investigation can alone furnish us with the data upon which the practice of the future is to be built.

---

### PROF. DR. W. D. MILLER.

THE friends of Professor Miller and the dental profession at large will be pleased to learn that the honorary degree of Doctor of Science, Sc.D., was conferred upon him by his alma mater, the University of Pennsylvania, at its public commencement held June 18, 1902. This is a well-earned honor, which, while expressive of a high appreciation of Dr. Miller's valuable contributions to the scientific advancement of dentistry, has a still larger significance in that by honoring Dr. Miller the scientific importance of dentistry and its right to recognition by an institution of higher learning is fully conceded. The degree conferred upon Dr. Miller is therefore an honor to dentistry as well.

---

### BIBLIOGRAPHICAL.

---

#### ANSWERS TO QUESTIONS PRESCRIBED BY DENTAL STATE BOARDS.

By ROBERT B. LUDY, M.D. Philadelphia: Conover Publishing House, 1902.

We might as well state frankly in the beginning that we are firmly opposed to the idea which prompts the publication of a work of this character, for the reason that we do not believe it to be subservient to any legitimate educational end. We do not intend to impugn the motives of those who prepared the work in question, but we believe that its effect will be to hinder rather than to help in the education of the dental practitioner. We quote the first sentence of the preface: "To pass creditable examinations is the laudable ambition of every earnest student. Many persons having an adequate knowledge of the subject in which they are tested fail because of their inability to interpret properly the intents and purposes of the questions to be answered by them." Which, if true, means one of two things: either that the examination questions are unintelligible because of faulty language-construction, or else that the student is lacking in the knowledge of the meaning of words,—and the remedy for the latter condition is not to be sought by the cramming of an indigestible mass of cut-and-dried answers



previous to examination. If a student be unable to comprehend the "intent and purpose" of an examination question stated with average perspicuity, then he should be excluded, for the reason that it is the proper function of the examination to ascertain just that element of weakness in his education.

Granting, however, that the foregoing view is incorrect, and that it is a desirable thing to have a book of this kind to aid the student in passing the ordeal of the state board examination, it will certainly be admitted that a work of such character should be beyond criticism as to the general accuracy of its matter. Judged by that standard, the present work is faulty in many particulars. Following are a few examples: "What advantage has amalgam over gold for filling teeth?" Answer: "It is decidedly easier of introduction." Concerning which we would ask, Is that all? "Give method of treating and filling a deep cavity, when the tooth is sensitive either to *hot* or cold?" (*Italics ours.*) In answer to the question, "Describe the method of preparing and inserting an amalgam filling," it is stated that "The alloy and the mercury are carefully weighed, and may be used in equal parts," and later it is said, "A portion of this is introduced into the cavity and well adapted against the parietes, after which *the mercury may be expressed from the remaining portion*, and, by introducing it against that first introduced, it will draw up the mercury" (*our italics, again*), and we query, Why weigh the mercury and alloy if the proportions are to be disturbed afterward by expressing the mercury? "Give the causes and general treatment of dental caries." Ans. "Lactic fermentation. Complete removal of decay, thorough sterilization of cavity, proper preparation and filling." This answer seems to us to indicate that the author of the work failed "because of his inability to interpret properly the 'intent and purpose' of the question to be answered. "Is the deposit of secondary dentin physiologic or pathologic?" Ans. "Physiologic, inasmuch as it is simply the revival of a normal function." This answer, we think, is open to the same criticism as the foregoing; for what caused the revival of function, if not a pathologic influence? "What are the risks attending the devitalizing of pulps by arsenic?" Ans. "Leakage, and consequent destruction of adjoining tissue." Once more we would ask, Is that all? "Why do pulpless teeth lose their natural hue?" Ans. "It is due to disorganization of the red blood corpuscles and their absorption into the dental tubuli, following the death of the pulp. Also the formation of various substances that act as discoloring agents. For instance, sulphide of iron may be formed, which produces the *yellow* discoloration." The

red blood corpuscles, after their disorganization, are no longer red blood corpuscles, hence cannot as corpuscles be absorbed by the dentin. And yellow sulfid of iron is yet to be discovered.

"Is lancing the gums indicated in dentition? if so, under what conditions?" Ans. "Lancing the gum is indicated in dentition when there is an extreme inflammatory condition of the gum over the tooth about to erupt, which is the cause of sufficient discomfort to impair the health of the child." Most everybody knows that some of the most serious complications of retarded infantile dentition curable by judicious gum-lancing occur in cases where there are no local gum manifestations whatsoever.

"Name the different materials used in filling teeth, and the conditions under which each is indicated, either separately or in combination?" In answer to this question we find, among other things, "oxychlorid of zinc is used as a lining medium *for very deep cavities*, covered with oxyphosphate of zinc, which in turn is an admirable cavity lining where the caries has not approached too near the pulp." If we might liken this to a coronation procedure in crowning an exposed pulp, we would be inclined to say, thereafter, God save the pulp! "When the pulp of a tooth has sloughed, leaving a discharge through the cavity of the tooth, how should the tooth be treated and filled?" Ans. "It should be treated with peroxid of sodium or a *strong solution of formalin* until every vestige of dead and decomposed tissue has disappeared." Strong solutions of formalin should never be used for such a purpose. "What materials are used to produce gum color in porcelain?" Ans. "*Principally purple of Cassius*." We should be glad to be informed of some other material capable of producing gum color. "Describe the method of repairing a continuous gum denture." In answer to this, among other things we find, "A new tooth is selected, accurately ground in position, backed and soldered to the original attachment." We never knew that in the repairing process continuous gum teeth were to be backed. "What relation should the artificial teeth bear to the alveolar ridge?" Ans. "The tooth should be so arranged that its long axis is in line with the vertical axis of the ridge, so that the direction of force will be in line of the *center of gravity*." Whose center of gravity? What center of gravity? "What is the substance known as vulcanite?" Ans. "It represents caoutchouc minus its hydrogen, which the admixed sulfur removes in the process of vulcanization." Only a part of the hydrogen is removed by the sulfur. If all the hydrogen were removed in the vulcanizing process, nothing would be left but the sulfid of carbon.

On its internal evidence the book is poorly fitted to perform the function for which it was intended, owing to the numerous errors it contains. If the student is to be excused from the power to think for himself in order to successfully pass his examinations, and must be crammed with ready-made knowledge to that end, at least let him be crammed with the truth and not with error.

DIE LOKAL-ANESTHESIE UND IHRE VERWENDUNG IN DER ZAHNÄRZTLICHEN PRAXIS.

LOCAL ANESTHESIA AND ITS APPLICATION TO DENTISTRY. By Dr. HERMANN THIESING. Leipzig: Arthur Felix, 1902.

This treatise on local anesthesia as applied to dentistry is a worthy addition to dental literature. The author discusses in a careful and intelligent manner the most important local anesthetics. The chapter on Cocain is well written, and the opinions therein expressed agree with the views of the foremost writers on the subject. The chapter on Dental Anesthesia is interesting, notwithstanding the fact that we have failed to find in it anything that has not already been brought before the dental profession.

The perusal of this work will prove of value to such dental students and practitioners as are conversant with the language in which it is written.

A PRACTICAL MANUAL OF BACTERIOLOGY FOR STUDENTS AND PHYSICIANS. By A. C. ABBOTT, M.D., Professor of Hygiene, University of Pennsylvania. New (Sixth) Edition, revised and enlarged. In one 12mo volume of 636 pages, with 111 illustrations, of which 26 are colored. Cloth \$2.75, net. Philadelphia and New York: Lea Brothers & Co.

The successive editions of this useful and standard work have been noticed in our pages as they have appeared. The present edition is much improved by the addition of an enlarged chapter on the treatment of suppurative inflammatory conditions. The chapter on Tuberculosis has been enlarged by the addition of much new matter covering later advances in the study of that disorder, and especially by the study of a group of acid-resisting bacilli which have recently excited interest from the fact that they are capable of producing tissue reactions somewhat similar to tuberculosis; this subject has been a field of special research by the author. Additional matter relating to infections of the intestinal canal has been included, with a description of the micro-organism now believed to be the cause of dysentery.

One of the especially interesting and important additions to the



work is the treatment of the problem of immunity. The chapter on Immunity has been revised to conform with recent views on that subject based upon the fundamental researches of Ehrlich, Morgenroth, Bordet, Buchner, and others.

The features which have heretofore characterized the work as a whole, making it one of the best, if not the best, student's text-books on the subject of bacteriology, are fully preserved in the present edition. We take pleasure in commending the work as the best text-book on the subject within our knowledge.

DISEASES AND INJURIES OF THE TEETH, INCLUDING PATHOLOGY AND TREATMENT. By MORTON SMALE, M.R.C.S., L.S.A., L.D.S., Dental Surgeon to St. Mary's Hospital, Dean of the School, Dental Hospital of London, etc.; and J. F. COLYER, L.R.C.P., M.R.C.S., L.D.S., Dental Surgeon Charing Cross Hospital and Dental Hospital of London. Second Edition, revised and enlarged by J. F. COLYER. London, New York, and Bombay: Longmans, Green & Co., 1901.

The first edition of this work at once established a place for itself among the text-books which have won favor with the teachers of dental surgery. The exposition of the subject is thorough, and from a point of view which regards dentistry as a full-fledged specialty of the healing art. The arrangement and development of its matter is thoroughly logical and its treatment is rationally scientific. The only exception which one might be inclined to take to features here and there in the work would be with reference to certain individual details, and not with reference to the principles taught. Much valuable new matter has been added, notably a chapter on the Bacteriology of the Mouth by Mr. Kenneth W. Goadby, bringing the work well into line with the latest advances which have been made, and the text is a scientific exposition of the foundation principles of our professional work.

Some changes in terminology are worthy of notice. For example, the terms "exostosis" and "absorption" have been replaced by "productive periodontitis" and "rarefying periodontitis." We might be inclined to criticize the selection of these particular terms as being the best available, but we heartily commend the principle underlying this change in nomenclature, based as it is upon a recognition of the nature of the pathological processes involved rather than upon the actual clinical condition. We commend also the substitution of the term "premolar" for bicuspid, and the use of the terms "maxilla" and "mandible" in distinguishing the upper and lower jaws.

We are glad to note the clear understanding and exposition given of that type of pericemental inflammation called gouty periodontitis. The clinical expression and the etiology of this disorder are most clearly set forth.

The work throughout is rich in important material. We are pleased to be able to commend the character of the illustrations, which are not only prepared with reference to their teaching value, but are admirably executed from a technical standpoint.

---

## OBITUARY.

---

### DR. ORVILLE E. HILL.

DIED, June 2, 1902, of Bright's disease, at his home in Brooklyn, New York, Dr. ORVILLE E. HILL.

Dr. Hill was born in October, 1833, at Olean, in the western part of New York state. He commenced the practice of dentistry in Brooklyn in 1861, at which time the dentists of that city, as well as elsewhere, were lacking in that spirit of association and friendly intercourse which has in more recent times come to be a professional characteristic. Feeling the need for social and professional intercourse, there being no association of dentists in Brooklyn at that time, Dr. Hill, in 1862, invited nearly every dentist in Brooklyn to meet at his office for the purpose of forming a society which should have for its purpose the promotion of good fellowship and of professional intercourse and advancement. The society thus formed, under the name of the Brooklyn Dental Association, was practically the foundation of the various dental societies which have later come into existence in greater New York.

When the law of 1868 was passed creating state and district dental societies, Dr. Hill took a leading part in the organization of the Second District Dental Society. He was chairman of the convention which completed the organization, and at its first meeting was elected a delegate to the first State Dental Society, which was organized in Albany in June of that year, and in which he was appointed chairman of the business committee. In 1873 the Dental Society of the State of New York conferred upon him its degree of M.D.S.

Dr. Hill was from the beginning an active worker, and at various times was president of numerous organizations in New York which had for their purpose the advancement of the art and science of dentistry. He was a member of the Brooklyn Dental Society, Second District Dental Society, New York Odontological Society, and the New York State Dental Society, of which latter he was president in 1881-2. He was also a member of the National Dental Association. He was a man of unceasing activity in his profession. It is doubtful if any law relative to the practice of dentistry in the state of New York can be found which does not largely bear the stamp of his mind. Correlative with his interests in the regulation of dental practice was his interest in the development of professional ethics. His standard was a high one. He stood always for honor and honesty in his

professional relationships. His supreme desire was to elevate the status and practice of the calling which was his life-work. His position assumed in all society debates on those questions which lay nearest his heart was always unassailable, being grounded in the principles of right and equity. He had full knowledge of his subject, faith in the rectitude of his position, and was uncompromising in his defense of the principles for which he stood. Notwithstanding the aggressiveness which characterized his defense of what he believed to be right he was always a generous antagonist. When in debate, the heart quality was ever a modifying factor and his criticisms were always delivered in kindness. His marked individuality, his genial disposition, his sympathy for those who sought his help, his affection for his friends, combined to make him a most lovable man in all of his relations with his colleagues.

Dr. Hill was a bachelor, and his home was as unique in its appointments and furnishing as the strongly marked individuality of the man himself. He possessed a high artistic sense, and his love of beautiful things combined with a cultivated taste made him a connoisseur in the collection of rare rugs, portiers, bric-a-brac, and various other beautiful art creations. He was also a collector of choice paintings. Besides his professional social relations, he was a member, and at one time president, of the Centennial, Crescent, Athletic, and Constitution clubs, as well as of the Amaranth Dramatic Society.

His funeral services were held at his home, 160 Clinton street, where he had practiced dentistry for forty years. A large assemblage of former patients and personal friends was present, and a full representative delegation from the societies of which he was a member were also present to do honor to his memory. The services were beautiful and impressive, and the closing prayer voiced the sentiments of many a heart whose privilege it had been to know Dr. Hill. His remains were interred at Olean, New York, where he had been born. The surviving members of his family are two sisters and two nieces.

---

### DR. ALBIGENCE WALDO KINGSLEY.

DIED, at Maitland, Fla., in March, 1902, ALBIGENCE WALDO KINGSLEY, M.D., one of New Jersey's oldest and best known dentists, of angina pectoris, in the eighty-sixth year of his age.

Born at Pittsfield, Mass., in 1815, he was a lineal descendant of John Kingsley, who landed in Dorchester in 1634, and through him he traced his ancestry back to one Rudolph, a Saxon surnamed "de Kingslea," who was, in 1116, appointed a keeper of the King's forest of De la Mere. The doctor came to Perth Amboy, N. J., in 1844 and taught school there and in Elizabeth, at which latter place he entered the office of Dr. E. S. Arms, a prominent physician and dentist, with the intention of becoming a physician. He graduated in medicine from the Castleton, Vt., Medical College in 1846, and married Miss Margaret A. Williams, of Orange, N. J., in 1847. While on his honeymoon he practiced dentistry with much success, and upon his return to Elizabeth, in 1847, determined to make it his life-work. In 1872 he formed a partnership with Alvin R. Eaton, D.D.S., and in 1880 retired and devoted himself to orange culture, dividing his time between Elizabeth and Maitland, Fla., where he owned an extensive grove.



He was one of the pioneers of his profession and held a high place therein, both professionally and socially, being twice president of the New Jersey State Dental Society. He was a representative of the highest type of the old school of dentistry, was well versed in every branch of his profession both mechanical and operative, and was one of the few men who in the early days carved their own blocks and made their own teeth. Dr. Norman W. Kingsley was his nephew and was a student in his office. He held many offices of trust and honor in the community in which he lived, and was at the time of his death an elder in the Westminster Presbyterian Church. A son and two daughters survive him.

A. R. E.

---

## REVIEW OF CURRENT DENTAL LITERATURE.

---

[*Wiener Zahnärztliche Monatsschrift*, Vienna, April, 1902.]

FILLING OF INCOMPLETELY DEVELOPED ROOT-CANALS. BY DR. F. FRAUNER.

The essayist discusses the use of paraffin as a substance for the filling of root-canals and states that while it has already been used for this purpose it has never before been employed specially for the filling of incompletely developed roots. He calls attention in a general way to the necessity of avoiding the passage of the filling material through the apical foramen, and says that the contact of paraffin with the soft tissues does not produce any reaction, and that for this reason it has been used in surgery for many years. He then takes up the properties which a root-canal filling should possess, and says that paraffin embraces the most important ones, *i.e.* impermeability, unabsorbability, the possibility of its being carried to the end of the root, slowness in setting, easy manipulation, the possibility of its being removed after its introduction into the canal, etc.

A description is given of cases in which paraffin was used to advantage in the filling of the root-canals of teeth in children. The paper concludes with the author's method of manipulating the paraffin, which consists in filling a metal syringe with the softened material, which is then allowed to harden and is put aside until wanted for use, when by slightly heating the syringe the paraffin melts, and can be easily introduced in the canals of the upper teeth. For the lower teeth, the paraffin can be melted upon a spatula, carried to the canal, and worked in by means of a broach.

[*Dental Review*, Chicago, May 15, 1902.]

CROWNS WITHOUT BANDS. BY F. E. ROACH, D.D.S., CHICAGO, ILL.

The purpose of this paper is to point out some of the cases in which bands are unnecessary and why in certain cases the elimination of bands is advantageous. In a large percentage of the six anterior teeth, the author states, better results can be obtained by the adjustment of bandless crowns.

After calling attention to the causes of failure with bandless crowns, Dr. Roach takes up the preparation of the root and says that it should be trimmed to conform to and to lie under the free margin of the gum. Regarding the preparation of the canal, it is stated that after locating and enlarging it with a large sized twist broach, the engine-twist reamer should be used to ream out the canal labially and lingually only, making a very narrow, deep hole slightly larger at each extremity. This method of preparing the root-

canal is advantageous in view of the fact that the root is not weakened, and that a post fitted to such a hole is very much stronger and more rigid than one made of round or square wire, as the force is applied edgewise.

The next step in the operation consists in preparing and fitting the post, which should be made of iridio-platinum plate, gauge 22 or 24. After this, a hole to correspond with the center of the root is punched through a piece of platinum plate of 30 gauge, slightly larger than the end of the root. The post is forced through it and introduced into the canal far enough to hold the disk in place until the outline of the root is obtained on the platinum plate by burnishing around the edge; it is then removed and trimmed to the outline indicated on the reverse side. The root is now trimmed below the gum, the post and cap disk are now refitted to the end of the root, removed and soldered, after which they are ready for the final adjustment. The crown may now be finished in any desired way. The author then states that gutta-percha is the material which should be used for the adjustment of this kind of crown, and that the success of this method depends largely upon the accuracy of setting with this material. The teeth that Dr. Roach has found suited for this sort of work are the upper canines and centrals, as well as any of the anterior teeth where the bite is very short.

. [New York Medical Journal, May 24, 1902.]

#### THE TREATMENT OF A PERSON WHO HAS SWALLOWED A POISONOUS DOSE OF CARBOLIC ACID. BY DAVID E. WHEELER, BUFFALO, N. Y.

The points to be considered in treating a case of carbolic acid poisoning are, first, removal of the poison; second, administration of chemical antidotes; third, stimulation; fourth, treatment of complications and sequelæ.

The author states that the first thing to be done is to introduce a stomach-tube and wash out the stomach, an operation which is likely to prove difficult and should be done methodically and without undue haste. The stomach tube should be passed preferably through the nose, as this gives room in the mouth for the left hand, which, passed deep into the pharynx, guides with the fore and middle fingers the tip of the tube back from the glottis into the esophagus. The stomach should be washed with alcohol of 35 degrees, as the use of this agent presents two advantages: First, carbolic acid is rapidly and completely soluble in alcohol; second, alcoholic solutions of carbolic acid are less poisonous than are watery solutions. It should also be added that alcohol arrests the escharotic action of carbolic acid, as is seen in the prevention by alcohol of carbolic burns of the skin. The danger of increased solubility is obviated by introducing alcohol into the stomach only after the physician has ascertained that he can immediately empty it, and by rinsing it out with water as soon as the carbolic acid is wholly removed. After this preliminary treatment, two ounces of any of the soluble sulfates dissolved in about four ounces of water should be introduced into the stomach and allowed to remain there.

The author then discusses the necessity of giving suitable stimulation to the patient, because of the shock caused by the irritant action on the mucous membrane of the alimentary canal, and also on account of the depressing influence of the carbolic acid upon the centers of respiration and circulation. The use of atropin is especially indicated, as its action on the cardiac, respiratory, heat, and secretory centers is directly opposed to that of carbolic acid. If the patient does not respond to full doses hypodermically given, intravenous infusion of from eight to twenty ounces of normal saline solution at 110° F. may be run very slowly into a vein, watching the effect on the pulse, and stopping the infusion as soon as the latter becomes full. The author also calls attention to the use of morphin in the treatment of carbolic acid poison-

ing, as it lessens the shock and gives rest and quiet; but if the acid has been swallowed dilute, as will be shown by the absence of eschars from the mouth, face, and breast, morphin is not indicated. He concludes with a discussion of the treatment of complications, which consists in keeping the patient warm, in examining the lungs twice a day, in keeping careful record of temperature, pulse, and respiration, together with appropriate diet, which should be chiefly of milk.

[*Therapeutic Gazette*, May 15, 1902.]

ADRENALIN A VALUABLE AID IN SURGICAL WORK UPON MUCOUS SURFACES. BY FLEMING CARROW, M.D., PROF. OPHTHALMOLOGY, ETC., MED. DEP'T UNIV. MICH., ANN ARBOR, MICH.

The author states that the visible effects of adrenalin chlorid are much more constant than those of cocain, and that the preparation seems to be more stable and reliable at temperatures at which it is likely to be kept. He prefers solutions of the strength of 1 : 2000, as the solution of that strength has all the properties that are of value in work on the eye, nose, and throat, and is safe and free from the danger of a cerebral stimulant effect sometimes seen after the use of cocain. The author has successfully used it in the treatment of inflammatory conditions of the ocular conjunctiva, especially those attended by great engorgement of the conjunctival vessels, as there is no question as to its control over pain, which results from fullness of these vessels, and it possesses antiseptic qualities of no mean order. Whenever it is desired to have a clear field free from annoying hemorrhage in surgical work, the use of adrenalin solutions is very helpful. The same good results have been obtained with the use of the solution of this strength in operations upon the structures of the nasal cavity.

Regarding the question of arresting hemorrhage, the author states that free bleeding follows the astringent effect of adrenalin, but that it occurs after the operation has been completed, when there is both room and time to control it. The author concludes his communication by saying that he regards this drug as a very valuable aid in surgical work upon mucous surfaces.

[*Archives de Stomatologie*, Paris, April, 1902.]

OSTEO-MYELITIS OF DENTAL ORIGIN IN THE INFERIOR MAXILLA, COMPLICATED WITH TIC DOULOUREUX OF THE LOWER LIP. BY DR. LEBEDINSKY, PROFESSOR AT THE ECOLE DENTAIRE DE FRANCE, PARIS.

The anatomical divisions of bone into periosteum, medullary substance, and the true osseous substance has its application in the pathology of this variety of connective tissue. The inflammatory lesions of bone are known under the names of periostitis, osteitis, and myelitis, according to whether the periosteum, the true osseous substance, or the medullary substance are affected. When the inflammation of the osseous substance is concomitant with that of the periosteum, the lesion is known as osteo-periostitis. When the inflammation of the osseous substance is concomitant with that of the contents of the medullary canal, it is known under the name of osteo-myelitis; but this classification, the author states, while being applicable to the long bones, can scarcely be applied to the flat or short bones, as the macroscopical structure of the latter is not the same as that of the long bones; in fact, in those bones, at least under ordinary observation, neither medullary canal nor marrow substance can be seen. This absence of marrow substance in flat bones explains why inflammatory lesions of the maxilla have been for a long time given under the term osteo-periostitis, and not under that of osteo-myelitis. The term osteo-myelitis was for a long time applied to inflamma-



tory lesions of long bones, which, as is well known, possess a medullary canal filled with medullary substance. Later on, the name osteo-myelitis was applied to a special disease of infancy and adolescence having relation to the development of the skeleton; but histological and anatomo-physiological researches have modified our conception of osteo-myelitis, for although the macroscopical structure of long bones be different from that of the flat or short bones, the same is not the case with the microscopical structure. After giving a description of the histological structure of the marrow substance in long bones, Dr. Lebedinsky states that that substance in the flat or short bones,—which, as is known, do not have a medullary canal,—is disseminated in the spongy tissue, in the Haversian canals of large caliber, in the nutrient canals of the compact tissue, and upon the internal surface of the periosteum. If we admit that the inflammatory lesion of the long bones can be periosteal, osteo-periosteal, and osteo-myelitic, such lesion of the maxilla, considering the particular disposition of its medullary substance, cannot present the same pathological evolution. "The inflammatory lesion of the maxilla is osteo-myelitic from the beginning."

After these preliminary remarks upon the histology and inflammatory lesions of bone, the essayist reports the case of a man aged forty-two, who was suffering from a severe disturbance of the lower jaw. The patient had suffered for a long time from toothache, and on that account had the second and third molars extracted. The dentist did not succeed in extracting the roots of these teeth, which he allowed to remain in the jaw, telling the patient that in time they would be exfoliated. The patient was only temporarily relieved, and as the pain reappeared the day after these unsuccessful extractions, he consulted another dentist, who, after several attempts, succeeded in extracting the roots that had been left in the jaw. The same evening the patient had a chill and suffered excruciating pain on the right side of the lower jaw. Two days afterward, the swelling of this region was so great that it interfered with the opening of the mouth. A physician was then called in consultation, but his treatment did not in any way relieve the symptoms. The patient then consulted his family physician, who referred him to Dr. Lebedinsky, who found an enormous swelling upon the right side of the lower jaw and upon the entire right subhyoid region. The skin covering this tumefaction did not present any special characteristics. The appearance of the patient was slightly cyanotic. Slight pressure upon the swollen tissues produced intense pain, the maximum pain corresponding to the place where the body of the lower jaw unites with the ascending ramus. A digital examination of the vestibule of the mouth revealed a swelling upon the ridge of the jaw which corresponded to the region from which the teeth had been extracted. The slightest pressure on this swelling produced an intense pain. After this incomplete examination, Dr. Lebedinsky concluded that the patient was suffering from an osteo-myelitis of the lower jaw, caused by an infection of the alveolar wound. (Regarding the diagnosis of this affection, the writer states that a painful swelling of the vestibule of the mouth is a characteristic symptom of osteo-myelitis.) The treatment consisted in lancing the swelling, an operation which was followed by the exudation of yellowish creamy pus of very offensive odor. The wound was then irrigated with a solution of mercury bichlorid 1 : 1000 and packed with iodoform gauze. The next day a slight improvement could be noticed. The operator succeeded in opening the mouth with a mouth-opener, when a thorough examination of the wound was made. The appearance of the region was extremely bad. The wound was filled with fragments of gum tissue, food débris, and dead osseous lamellæ, all being bathed in pus. The operator performed a thorough curetting of the alveoli and washed out the wound with the bichlorid solution. After this treatment the patient improved, but continued to suffer pain, and as this condition persisted, another

examination was made of the region around the angle of the jaw. This revealed the presence of a movable piece of necrosed bone. It was not thought advisable to remove the sequestrum, as in so doing the vessels and nerves of the region might have been injured. A few days afterward the sequestrum, perfectly loose, was removed with a pair of pliers.

Dr. Lebedinsky gives a description of the sequestrum, and calls attention to the interesting feature presented by its internal surface, in which could be seen a deep canal the floor of which was partially absent. This canal, the author states, was the inferior dental canal, which gives passage to the inferior dental nerves and vessels. If the canal had been complete,—that is, if the floor had not been partially absent,—the sequestrum could not have been removed without injuring the above-mentioned nerves and vessels, but as the floor of the canal had probably been the seat of inflammatory lesions, it broke away during the process of removing the necrosed area. After the removal of the sequestrum, antiseptic irrigations were carried on during a few days, but, notwithstanding the fact that the wound was healing rapidly, the patient continued to complain of pain in the lower jaw and upon the right half of the lower lip, comparable to the feeling incident to the passage of an electric current. Some time later he returned, complaining of pain in the same area, though less intense. When the patient lay upon the healthy side of the head he felt perfectly comfortable, but suffered distress when lying upon the diseased side. The contact of sugar with the alveolar border provoked a burning sensation in the lip. The contact of food produced very slight or almost no pain. The painful paroxysms occurred on especially humid days. During all this period the lip had not presented any inflammatory lesion. The author is hence of the opinion that the disturbance is neuralgic in character, or that it may be a case of tic douloureux. It is almost certain that the inferior dental nerve suffered a neuritis which extended to the mental nerve. In explanation of the localization of the neuritis upon the mental nerve, the author says that it is probable that the position of the dental canal permitted pus to remain in contact for a longer period with the terminal branch of the inferior dental nerve, and for that reason the pathological changes in the mental nerve are more intense. It is probable that the irritation of the alveolar border was transmitted by the dental nerve to the mental branch, this causing the burning and electric sensation referred to.

The author concludes his paper by stating that his future treatment will consist in cauterizations of the alveolar border with the thermo-cautery, in order to destroy the cicatricial tissue that might be a starting-point of tic douloureux, as has been shown by Dr. Jarré.

[*American Journal of the Medical Sciences*, Philadelphia, June, 1902.]

A STUDY OF HYPERPLASIA OF THE PHARYNGEAL LYMPHOID TISSUE (ADENOIDS) WITH SPECIAL REFERENCE TO PRIMARY TUBERCULOSIS OF THE PHARYNGEAL TONSIL. By AUGUST JEROME LARTIGAU, M.D., AND MATTHIAS NICOLL, JR., M.D.

The following are the conclusions of this essay:

(1) Adenoids consist essentially of hyperplastic pharyngeal lymphoid tissue. The epithelium and fibrous tissue changes are inconsistent and variable, and independent of the age of the patient. The newly formed fibrous tissue is largely perivascular in distribution. It may occasionally be one of the factors in the process of disappearance of the adenoid.

(2) The hyperplastic pharyngeal tonsil often contains micro-organisms, and these are mainly pyococcal forms. The bacteria for the most part lie near the surface, and the infection usually occurs from the surface, with or without demonstrable lesion of the epithelium.

(3) Primary tuberculosis of adenoids is probably more common than most

previous studies show. Sixteen per cent. of our series contained tubercle bacilli, ten per cent. with characteristic lesions of tuberculosis. The tubercle bacilli were present in small numbers.

(4) The lesions in primary tuberculosis of the adenoid are generally close to the epithelial surface and focal in character. Occasionally they may be found in the deeper parts of the pharyngeal lymphoid tissue.

(5) The pharyngeal tonsil may be a portal of entry for the tubercle bacillus and other micro-organisms in localized or general infections.

[Read before the Section on Odontology of the French Association for the Advancement of Science, at Ajaccio, Corsica, 1901.]

# THE DISEASES OF THE MAXILLARY SINUS AND THEIR TREATMENT BY THE DENTIST. BY DR. OSCAR AMOËDO, PROFESSOR AT THE ECOLE DENTAIRE DE FRANCE, PARIS.

The author reviews the literature on this subject, stating that it was toward the close of the seventeenth century that Highmore published his description of the antrum that bears his name, although he only followed Casseus' previous description, who practiced the trepanation of the sinus by the extraction of a canine. Molinetti also reported at about the same time the treatment of an abscess of the sinus by buccal trepanation. Besides these two writers, nothing is found on this subject at that period. The extraction of the first molar for the treatment of abscess of the sinus was suggested by Wm. Cooper at the beginning of the eighteenth century. Dracke, Meibomius, and Juncker recommended alveolar trepanation, and rejected Molinetti's process. The first important work on this subject was Runge's thesis, published in 1750, wherein the principal diseases of the sinus are carefully described. He considered Dracke's method of trepanation of the alveolus to be the best, and at the same time reported a case that had been successfully treated by his father by trepanation of the anterior or buccal wall.

After reviewing the writings of Heuermann, Ocrel, Bourdet, Gooch, Henkel, Jourdain, Bordenave, Lamorier, Hunter, Bell, Weyland, Richter, Chopart, and Desaut, the essayist says that the works of Lister and Pasteur brought about a change in the treatment of diseases of the sinus as in all other branches of surgery. Zukerkandl and Ziem also carried out important pathological work on this region. The author then refers to the researches of Dr. Aguilhon de Sarrau, and describes his *modus operandi*, which consists in making a large opening through the alveolus and filling the sinus with carbolyzed cotton; also to the investigations of De Luc, Caldwell, Robertson, Hill, and Spier. Luc described his method as being entirely original, but in reality it was Caldwell, the American surgeon, who first described the operation, the priority of which was recognized by the French Society of Otology.

Dr. Amoëdo divides diseases of the maxillary sinus into simple inflammation, chronic inflammation and necrosis of the walls. First, *simple inflammation of the antrum*. The symptoms of acute sinusitis, simple inflammation or catarrh of the sinus, are acute and persistent pain in the region of the sinus radiating to the nose or to the eyes, and the teeth may be loose and painful under pressure. Second, *chronic inflammation of the sinus*. Regarding chronic inflammation (abscess or empyema) the writer makes the interesting remark that chronic sinusitis cannot be called abscess of the sinus, inasmuch as an abscess means the mortification of the tissues and the formation of a cavity at the expense of the tissues in which the abscess is located, a condition which does not take place in chronic inflammation of the sinus. Chronic inflammation of the sinus may be caused by external violence (fracture, cutting instruments, firearms, etc.), and infection following extraction. When the roots of teeth project into the sinus an alveolo-dental periostitis is very likely to bring about suppuration of the antral cavity. Diseases of the nasal



cavity, of the eye, and even of the cheek, can likewise be the cause of this disturbance; inflammation of the frontal sinuses can produce inflammation of the antrum through the infundibulum; and finally, the condition may ensue from infection during the treatment of dead teeth.

Regarding the pathological anatomy of these diseases, Dr. Amoëdo states that the studies of Mare and Foucher-Dumesnil are those which can be considered classic. These authors state that the pus is ordinarily fœtid, cheesy, or clotted,—that the nasal orifice of the sinus may be obliterated or free, and finally that thickening or necrosis of the walls takes place.

Discussing the symptomatology of the disturbances of the antrum, the essayist says that pain is a very uncertain symptom; it is not always present or localized in the malar region, and sometimes it radiates to the frontal region. Swelling of the cheek is still more rare, and Zukerkandl, who examined three hundred cases, observed only one case of dilatation of the sinus. The only symptom that is a certain one is the fœtid discharge through the nostril of the corresponding side. This discharge takes place when the patient inclines the head forward and downward. The patient is, as a rule, conscious of the bad odor, which has a special character of fœtidity. The discharge can pass back into the nose, and a careful rhinoscopic examination will permit us to differentiate between purulent catarrh of the throat and chronic inflammation of the sinus. If the case is not treated, the discharge brings about a diseased condition of the mucous membrane of the nose. The ethmoidal and frontal sinuses are soon attacked by the spreading of the disease through their openings into the middle meatus. Later alveolar, palatal, or canine fistulas may be formed, but the most important thing to remember is that the disease usually develops without the knowledge of the patient and is generally discovered in the course of an examination for some other purpose.

It must be remembered that not only decayed and unfilled teeth and roots may cause inflammation of the antrum; we have found many times that a tooth absolutely painless, giving under percussion a tympanic sound and being translucent under the electric light, has caused sinusitis. The explanation is easy: A tooth in which the pulp has died is attacked by alveolo-dental periostitis. This is followed by an abscess that opens into the antrum, leaving a fistula by which the discharges from the dead pulp continue to pass. As a consequence, an ossification of the pericementum takes place, the tooth becoming firmly attached to the alveolus. One way of confirming the diagnosis consists in the injection into the root-canal of a syringeful of hydrogen dioxid, which in the presence of pus effervesces, the foam being easily detected on blowing the nose, and the peculiar noise produced by the effervescence of the hydrogen dioxid can be easily heard by the patient.

From the foregoing statements the conclusions can be drawn that fœtor of the breath may lead us to suspect inflammation of the antrum; that the presence of a dead tooth or root increases the probability of correct diagnosis, and that the hydrogen dioxid confirms it. The essayist mentions the sure diagnostic signs of inflammation of the antrum, *i.e.* the sign of Fraenkel, which consists in the reappearance of pus in the nose on inclining the head forward and downward, after the nostrils have been previously cleared; and the sign of Herring, which consists in the detection of opacity under the electric light. More recently the German authors have advised making explorative punctures through the alveolus, canine fossæ, or the middle or inferior meatus.

Dr. Amoëdo advises, for simple catarrh of the sinus, the cleansing of the antrum with hydrogen dioxid through the root-canal without extraction of the tooth. For chronic inflammation, the tooth should be extracted and the antrum irrigated with hydrogen dioxid and with potassium permanganate or potassium chlorate; at the stage of vegetation, chromic acid, followed by irri-

gations, and at the stage of necrosis, lactic acid followed by non-irritant antiseptic washes.

[*Revista de la Asociación Médico-Farmacéutica de la Isla de Cuba, Havana, March, 1902.*]

# GUAIACOL IN THE EXTRACTION OF TEETH. BY DR. B. MARICHAL.

Since the anesthetic properties of guaiacol became known, the idea was conceived of using this agent in dental surgery, and Dr. Marichal has obtained very satisfactory results with the use of the formula suggested by Dr. André, which is as follows:

R—Guaiacol, chemically pure, 1 gram;

Olive oil sterilized and neutralized, q. s. to make 10 c.c. M.

Sig.—For hypodermic injection, each cubic centimeter containing 10 centigrams of guaiacol.

In one hundred extractions, Dr. André observed that the effect of guaiacol is at least equal to that of cocain, and that in certain cases in which the cocain does not produce the desired effect, as in periostitis, perialveolar abscess, and radicular cysts, guaiacol produces perfect analgesia;—*analgesia*, as sensibility to touch is preserved, the sense of pain being the only sensation destroyed. This agent, then, is not a true anesthetic, but an analgesic.

Guaiacol has also produced favorable results in the treatment of pulpitis, the pain having subsided through the application of the drug in the carious cavity, without the necessity of opening the pulp-chamber. The hypodermic injections of guaiacol are made in the same way as those of cocain; the quantity injected is generally a cubic centimeter, and from three to five minutes should elapse between the injection and the extraction. Dr. Marichal recommends the use of this agent and asks his colleagues to test its efficiency. It being entirely non-toxic, and not caustic, its use as an agent for the painless extraction of teeth should become very general.

[*Revue Odontologique, Paris, September, 1901.*]

# SEPTIC AND POLYMICROBIC AFFECTIONS. BY DR. LEBEDINSKY, PROFESSOR AT THE ECOLE DENTAIRE DE FRANCE, PARIS.

The various forms of stomatitis are inflammations of the buccal mucous membrane, which according to their location are known as gingivitis, cheilitis, glossitis, etc. Inflammation of the buccal mucous membrane begins almost always at the gums; it would therefore be preferable to call such inflammation gingivo-stomatitis, thus indicating the origin of the disturbance.

Ulcerous stomatitis has been studied more attentively than the other forms. Dr. Bergeron's work (1859) on the ulcerous stomatitis of soldiers is prominent among these important works. Bergeron considers it an infectious, specific, contagious, epidemic, and inoculable disease.

The numerous varieties of stomatitis have opened the way to various classifications, based on the occasional etiology and evolution of the disease, which at present cannot be accepted. Looking at this question exclusively from a pathogenic point of view, Dr. Lebedinsky has divided the forms of gingivo-stomatitis into two groups: First, specific gingivo-stomatitis; and second, polymicrobic gingivo-stomatitis. He says:

(1) *Specific gingivo-stomatitis* is an affection of the buccal mucous membrane which is only a local manifestation of a general disease, and which is caused by the same known or unknown specific and pathogenic agent which has caused the general disease. Syphilis, tuberculosis, diphtheria, aphthous fever, measles, smallpox, scarlet fever, respectively, may bring about stomatitis, which would then be called syphilitic stomatitis, tuberculous stomatitis, diphtheritic stomatitis, etc.

Pyrexias deserve especial attention from the point of view of the buccal lesions that they may produce. The eruptive fevers may cause two varieties of stomatitis, the specific and the septic. The specific gingivo-stomatitis of eruptive fevers is a manifestation during the period of eruption (enanthema); while the septic gingivo-stomatitis is a complication, a secondary infection which begins generally during the period of convalescence. Smallpox, for instance, may manifest itself in the buccal cavity in the form of a pustulous eruption; scarlet fever by redness of the mucous membrane. These different manifestations are probably caused by the same unknown pathogenic agent as the fevers themselves. They are forms of specific gingivo-stomatitis. The eruptive fevers play a more important rôle in the etiology of septic gingivo-stomatitis, as the economy, after a series of unsuccessful defensive attacks, offers a favorable ground for secondary infection, which is of polymicrobial character.

The specific gingivo-stomatitis has its own peculiar characteristics. The syphilitic stomatitis does not resemble in any way the tuberculous stomatitis, nor does the latter resemble diphtheritic or aphthous stomatitis. The hard chancre of the buccal mucous membrane, which is an *exulceration* without borders, with an indurated base, and always accompanied by adenopathy, does not resemble, either from an etiological point of view or from a pathogenic one, the tuberculous ulcer, which has its own characteristics. The tuberculous ulcer, with its surrounding yellow spots, does not resemble the gummatous ulcer with its perpendicular borders, its indurated base, and its core-like bottom. The hypertrophied tongue, with marked patches and grooves peculiar to syphilitic infection (Clarke's tongue) does not resemble by any means the cancerous tongue. The buccal diphtheria produced by the Klebs-Loeffler bacillus has no similarity to aphthous stomatitis.

(2) I call *septic gingivo-stomatitis* all primary or secondary infections of the buccal mucous membrane whose pathogenic agent is found in the buccal polymicrobism. The different fevers, diabetes, Bright's disease, pregnancy, traumatism, tartar, the ingestion of mercury, lead, or potassium bromid, produce only septic gingivo-stomatitis, the pathogenic agent being the buccal polymicrobism.

If it be desired to classify the forms of gingivo-stomatitis from an etiological point of view, then we might be justified in speaking of "brightic," gravidic, traumatic, tartaric, mercurial, plumbic, bromo-potassic, bismuthic gingivo-stomatitis. If, on the contrary, the classification is to be made from an evolutionary point of view, then we will have the erythematous stomatitis, the erythematopultaceous, the ulcero-membranous, and the gangrenous. But, from a pathogenic standpoint, we shall still be confronted with the same septic polymicrobial gingivo-stomatitis.

It seems to me that it is not rational to make different morbid entities of the same disease, and to base ourselves on its etiology or pathological evolution in order to make undesirable classifications, especially when we consider that the pathogenic agent is always the same, *i.e.* the buccal polymicrobism. It matters not whether the gingivo-stomatitis be caused by the ingestion of lead, mercury, potassium bromid, or silver nitrate; it matters not if it be brought about by an attack of measles, by the gravidic state, by scarlet fever, by the eruption of a third molar, by diabetes, Bright's disease, or by deposit of tartar. All these agents work toward the same end,—they prepare a favorable medium for the numerous micro-organisms of the mouth, and disturb the biological equilibrium of the buccal region. As a consequence, when the microbial action does not encounter any longer the effective reaction of the buccal region, polymicrobial infection takes place and septic gingivo-stomatitis is the result.

Some writers, again, endeavor to differentiate the forms of stomatitis by the location of pain, and others by the character of the ulcerations. Now,



let us admit for the time being the foregoing statements, and let us suppose that the ulcerations are straight upon the gums and oval upon the cheeks. Let us suppose that the gingivo-stomatitis begins at the region of the molars, and that the pain is located in the angle of the jaw. I cannot see any difference from a pathogenic point of view; the polymicrobism is always present, and plays the most important rôle in the production of septic gingivo-stomatitis. The septic gingivo-stomatitis is polymorphous, just as are the numerous micro-organisms of the mouth which bring it about. The gingivo-stomatitis is polymorphous with regard to its location, as a *locus minoris resistantiæ* is not always established at the same point in the mucous membrane; it is also polymorphous from the standpoint of its evolution, as the micro-organisms of the mouth do not always have the same amount of virulence, and consequently do not act in the same way; it is also polymorphous with regard to the resistance offered by the economy. The classical works, in order to give to mercurial stomatitis a specific nature, repeat with Ricord that it begins on the side upon which the patient sleeps. Basing myself on many observations, I refute this statement. It does not make a particle of difference upon which side of the body the patient sleeps, the stomatitis will begin where carious teeth are present, where teeth are covered with tartar, and at the level of diseased roots. It will always begin in the spot where a *locus minoris resistantiæ* has been established. Old edentulous people and children that have no teeth cannot be affected with mercurial gingivo-stomatitis. This proves that it is not the mercury that is the pathogenic agent of mercurial stomatitis. The mercury only upsets the biological equilibrium of the buccal region, and thus the polymicrobism, not finding any resistance, produces the gingivo-stomatitis. Many other chemical substances can produce septic gingivo-stomatitis by disturbing the biological equilibrium of the buccal region.

Whatever be the action of the chemical substances, whether this be increased or not by a decrease in the resistance of the economy, the result is always the same.—the buccal region has now lost its biological equilibrium and the buccal polymicrobism produces septic gingivo-stomatitis. The chemical substances seldom produce the septic gingivo-stomatitis in persons whose mouths are in a perfect hygienic condition.

The ulcerous stomatitis (stomachic, scorbutic gangrene of the gums) that Dr. Bergeron described in 1859, in his remarkable work on the "Stomatite Ulceruse des Soldats," was considered by the majority of physicians, and by Bergeron himself, as being a specific, endemic, contagious and infectious disturbance. I do not partake of this opinion, and consider that the form of ulcerous stomatitis described by Bergeron belongs to the variety of septic gingivo-stomatitis that I have described. . . . In a letter that Dr. Bergeron addressed to me February 25, 1899, in relation to my work on gingivo-stomatitis and buccal polymicrobism, he still insists on the specificity of the ulcerous stomatitis of soldiers. He says: "The reading of your work has been highly interesting to me and very instructive, but it has not shaken my convictions on the specific and contagious nature of ulcerous stomatitis as I have observed it in soldiers and children, and that foreign physicians have observed in the Danish, Portuguese, and other armies." As I had expressed in my paper some doubt as to the efficacy of potassium chlorate in the treatment of ulcerous stomatitis, and having substituted it by stronger antiseptics such as mercury and thymol, Dr. Bergeron wrote to me as follows: "You do not seem to be as fully convinced as I am of the efficacy of potassium chlorate in the treatment of ulcerous stomatitis, but I assure you that the soldiers to whom I administered it proved to me the value of this agent by their appreciation of my treatment in only one day after I had prescribed it." "Potassium chlorate," he continues, "did not figure in the military pharmacopeia when I

entered into the medical service. I introduced it and administered it in my service; since then it has occupied a place in the military pharmacopeia, and thanks to it we observe only rare cases of ulcerous stomatitis. The disease does not any more follow an epidemic course; when treated from its onset at the hospital infirmary it soon becomes cured and its propagation is arrested."

In comparing the specific ulcero-stomatitis of Bergeron with the septic gingivo-stomatitis produced by the abnormal evolution of the third molar, one is surprised to observe a great similarity in these two affections. In the two cases the evolution takes place under such similar conditions that I cannot help thinking that a considerable number of Dr. Bergeron's patients were attacked by septic gingivo-stomatitis brought about by the difficult eruption of the wisdom tooth. The ulcerous stomatitis of Bergeron is produced by multiple causes; there are local causes, such as the difficult eruption of the third molar, and general causes, such as the infectious diseases which precede or which accompany the ulcerous stomatitis. In the first case, the third molar destroys the biological equilibrium of the buccal region by creating a *locus minoris resistentiæ*; in the second case the biological equilibrium of the buccal region is disturbed because that of the entire organism had been previously disturbed by infectious diseases. The relation of the elements which compose the buccal field are now not in harmony; the phagocytic action cannot neutralize the toxic action of the micro-organisms of the mouth, and polymicrobial septic infection ensues.

The ulcerous stomatitis described by Bergeron cannot be specific; it is the product of buccal polymicrobism, and belongs to my variety of septic gingivo-stomatitis.

The conclusions that the author draws from his interesting paper are the following:

The buccal cavity is inhabited by numerous micro-organisms, but at the same time it possesses its own specific elements of defense, represented by the lymphatic system, whose function is reinforced by the positive chemiotactic action of the saliva. The polymicrobial action is neutralized by the reaction of the leucocytes, hence there exists a biological equilibrium in the buccal region.

If the biological equilibrium of the buccal region is disturbed by any cause, local or general, the polymicrobial action being superior to the resistance of the leucocytes, an infection of the buccal cavity which I call septic gingivo-stomatitis, and which is always the work of the buccal polymicrobism, takes place. I do not accept the different classifications of gingivo-stomatitis that have been made up to the present time, as the different authors describe the same morbid entity under different names by giving attention only to the occasional etiology or to the evolution of the disease.

According to my opinion, there are only two varieties of gingivo-stomatitis: the *specific gingivo-stomatitis*, the pathogenic agent of which is a specific microbe, and the *septic polymicrobial gingivo-stomatitis* caused by the buccal polymicrobism.

[*Dental Summary*, Toledo, Ohio, June, 1902.]

DIAGNOSIS IN DENTAL PRACTICE. BY W. H. WILSON, M.D.,  
D.D.S., CLEVELAND, OHIO.

After a concise discussion of the subject, the author presents the following conclusions: Examine the *mucous membranes* to notice color and infiltration from disease. The *tongue*, its coatings to diagnose intestinal disturbances, also its movements to note nervousness. The *gingivæ*, which are

indicators of diseases of the peridental membrane; and finally, the *teeth* that are present and as to the necessity of supplying absent ones or correcting those that are irregular.

As there are so few pathognomonic signs, mouth diagnosis is carried out largely by differentiation or exclusion; therefore the clinical manifestations of the dental pulp and of the peridental membrane, namely, sensitivity to thermal changes and to touch respectively, are factors to be considered in our determinations of disease of these organs.

[*l'Odontologie*, Paris, April 30, 1902.]

A CASE OF FRACTURE OF THE LOWER JAW. BY PROFESSOR MAURICE ROY, PARIS, FRANCE.

The essayist describes the case of a laborer who, while working on the underground railroad in Paris, fell from a height of ten meters, fracturing his lower jaw at the symphysis and dislocating backwardly the right condyle, as a consequence of which the anterior wall of the auditory meatus was fractured and forced inward, causing profuse hemorrhage,—an occurrence usually met with only in cases of fracture of the base of the skull. The treatment consisted in the application of an aluminum splint, which was permitted to remain *in situ* until complete consolidation of the fracture took place.

This case is interesting in view of the complication in the auditory meatus, the pressure of the condyle against the anterior wall of the meatus having caused a hemorrhage, which, as stated, in a large majority of cases is a symptom of fracture of the base of the cranium.

[*New York Medical Journal*, May 10, 1902.]

IODIN AS A CAUSE OF EPITHELIOMA. (EDITORIAL ARTICLE.)

Multiple epitheliomata have been regarded as occasionally due to the use of arsenic, and Hutchinson, in *Archives of Surgery*, considers that many cases of multiple cutaneous sarcomata may be fairly attributed to the use of iodine and its salts. Besides the frequency with which iodine salts are administered in a legitimate manner, many patent medicines are known to contain that drug. Iodine is also used in some of the commercial arts, as particularly in the preparation of photographic materials. We recollect having heard of cases in which multiple warts on the hands were supposed to have originated from prolonged contact with iodine and iodine preparations by persons engaged in photographic industries.

[*Items of Interest*, New York, June, 1902.]

ORTHODONTIA AND ITS RELATION TO TEMPERAMENT. BY EBEN M. FLAGG, D.D.S.

The author shows the necessity of making our operations harmonize with those individual peculiarities which characterize the patient. He calls attention to the necessity of having a competent knowledge of normal occlusion before attempting the correction of normal deformities, and after discussing the etiological factors in irregularities of the teeth, takes up the relationship between temperament and dental deformities. He lays particular stress upon the point that in restoring the face and jaws to beauty and usefulness we should carefully consider the kind of arch to be obtained in conformity with the temperament of the patient, and not think that any one curve or shape of arch is ideal to all cases.



## PERISCOPE.

**Sandarac Varnish.**—A good sandarac varnish is prepared by dissolving half an ounce of gum sandarac in eight ounces of alcohol.—J. E.

**The Most Practical Thing.**—I have a great deal of sympathy for and interest in the position of the so-called practical man, but I believe the time will come when this practical man, with his ideas, will see that the most practical thing we have is science,—practical because it is true.—E. C. KIRK.

**To Prevent Soreness of Gum from the Application of Clamps to Teeth.**—The soreness which follows the application of an ill-fitting clamp can be prevented in a great majority of cases by brushing the gum around the neck of the tooth with tincture of calendula. This preparation has the valuable property of preventing soreness and suppuration and of inducing the rapid development of healthy granulations.—J. E.

**Three Important "Don'ts."**—

Don't operate on your cases of tic douloureux before pushing strychnin and aconitin to their full physiological limit.

Don't incise a gumma; promote absorption with potassium iodid.

Don't permit a man to administer chloroform who is accustomed to give ether.

—*Medical World.*

**Adrenal Extract.**—This drug when administered through the mouth, as in cases of hemorrhage from the stomach, may cause violent vomiting. To obviate this, Dr. J. Adam (*Semaine Médicale*) administers the powdered suprarenal extract through the rectum. After washing out the bowel with twenty grains of calcium chlorid, he injects at first every two hours, then every four hours, ten grains of the pulverized adrenal extract suspended in water.—*Amer. Journ. of the Med. Sciences.*

**Gelatin as a Hemostatic.**—Y. MIRA (*Centralbl. f. Chir.*, quoted in *Medical News*) states that gelatin was used as a hemostatic in Europe in the beginning of the last century, while in China and Japan there are records from the third century, A. D., according to which it was thus used in all kinds of hemorrhage. It seems to have been taken to Japan by the Chinese, among whom it was in use rather generally about 1000 A. D. Of course in China and Japan subcutaneous and intravenous injections of gelatin were unknown, a solution in water being the general method of administration.

**Prevention of Chloroform Vomiting.**—According to the *Medical World*, Fraenkel uses the combination which here follows to prevent chloroform vomiting:

R—Morphinæ muriatis, 20 grains;  
Atropinæ sulfatis, 2 grains;  
Chloral hydratis, 35 grains;  
Aquæ destillatæ, 2100 grains. M.

Sig.—Hypodermic injection of 15 to 20 drops before beginning anesthesia.

**Gargle for Catarrh and Hoarseness from Cold in the Throat.**—

R—Borax powdered,  
Potassium chlorate, of each 4 drams;  
Potassium carbonate, 6 drams;  
Table salt, 2 ounces;  
Water enough to make 1 pint. M.

Sig.—Use as a gargle, diluted if required.

—*Exchange.*

**Perfect Teeth in Ancient Times.**—Workmen who have been engaged in excavating foundations for some new shops in Silver street, Gainsborough, have found nearly the whole of nine skeletons. They were found lying in a position as though buried in a trench. The supposition is that the place was in early days the site of a military burial-ground. Competent authorities are of opinion that some of the men must have been nearly seven feet tall. The teeth in the skulls of what were fully developed men show that dentists were not needed in early times. In some of the largest of the skulls not a tooth is missing, and all are white, even, and sound.—*Dental Record*.

**Impressions of the Face.**—Oil the face with white vaseline and put a head-cap on, to prevent the plaster from falling into the hair. Put plaster all across the forehead and sides of the face to prevent the impression from sagging, and after the plaster has been flowed up to the alæ of the nose, insert a tube so that respiration is not interfered with. The plaster should then be built over the central portion of the face and nose. In using slow-setting plaster use wet towels to keep the face cool. Remove the plaster cast down, pulling off toward the center of the nose. Varnish the impression with sandarac, then use soap as a separating medium.—*Western Dental Journal*.

**Dental Prophylaxis.**—"It would be difficult to define clearly what the best modern practice is,—conditions, details and methods vary so much; but the fundamental controlling thought may be expressed in the dictum, 'A clean tooth-surface will not decay,' so that all the energies of the operator should be directed to obtain and maintain this condition. If the carious portion of the tooth be carefully removed and the cavity thus formed be kept clean and free from caries-producing germs, no fresh decay will follow. The impossibility of doing this makes the filling necessary, so that a contiguous surface which can be kept clean and free from germs may be obtained. In no case is there any saving virtue in the filling material itself, unless it may be in some of the copper amalgams."—GEO. S. ALLEN, D.D.S., in *International Dental Journal*.

**An Old Amalgam Filling.**—On page 415 of the DENTAL COSMOS for April mention is made of a gold filling fifty-seven years old, and on page 533 of the May number, of a tin filling sixty years old. For about thirty-five years I have had as patient a lady who in her girlhood days was a patient of Dr. Elisha Townsend's. In a lower molar is an amalgam filling, inserted, she says by Dr. Townsend one or two years before her marriage, which took place when she was twenty-two years of age. She is now in her seventy-ninth year,—hence, unless her memory is at fault, the filling has been in place fifty-seven or fifty-eight years. It covers most of the occlusal, about half of the buccal, and a small part of the distal surfaces, is very dark, but has retained its original shape and is closely adapted to the walls of the cavity. On June 30, 1891, I filled a narrow cavity of decay along the gum margin with gutta-percha which at this date is in a good state of preservation. GEO. F. PLATT, D.D.S.

**Little that is New Under the Sun.**—In reviewing the long range of operative procedures which have become standard methods in dental practice to-day, it is extremely difficult to find one which has not been suggested at some previous period, often of remote antiquity. For example: The use of bibulous paper, pledgets of cotton, pieces of spunk, rubber dam, and various fabrics to be used in connection with a burnisher or plugger for the purpose of expressing the excess of mercury from an amalgam filling, is supposed to be a mode of practice of quite recent origin. We find, however, in the *Dental News Letter* of April, 1855, page 174, the following

from an anonymous writer: "In condensing the filling after the amalgam is packed into the cavity, I cover with a few folds of a linen napkin and then press on it with a plugger, giving the instrument a kind of jerking or percutent motion; by this means fine globules of mercury are displaced and taken up by the napkin, and may thus be removed from the filling, and the process of solidifying the amalgam is very much facilitated."

**Nervocidin.**—According to the *Lancet*, nervocidin is obtained from an Indian plant called "gasu-basu." The anesthetic action of the active principle of this plant was discovered by Dr. Dalma, of Fiume, Hungary, about a year ago. A report appeared in the *DENTAL COSMOS* for November, 1901. Nervocidin is the active principle of the "gasu-basu" plant in combination with hydrochloric acid, and in solutions of one-tenth or one-twentieth of 1 per cent. produces a marked local anesthesia of the cornea in warm-blooded animals. Two drops of a one-twentieth of 1 per cent. solution applied to the human conjunctiva produced a burning sensation accompanied by lacrymation, followed after twenty minutes by anesthesia of the cornea lasting about five hours. After seven hours the cornea regained its normal condition. A one-tenth of 1 per cent. solution of nervocidin brushed over the mucous membrane of the cheek caused local anesthesia of the brushed surface and of the tongue, accompanied by loss of the sensation of taste and perception of heat and cold.

**Sensitive Dentin.**—By adding just sufficient of carbolic crystals to cocain hydrochlorid, and rubbing together with a spatula till the cocain is dissolved, a thick syrup is obtained which is escharotic, antiseptic, and obtundent. With this we often obtain most gratifying results in the treatment of sensitive dentin in cavities of decay. It should be used with the rubber dam, —dryness to the verge of desiccation being secured,—applied warm, and treated *in situ* with the hot air syringe as hot as can be borne, and the tooth again dried before excavating. If one application fails, two will almost invariably be effective.—*Exchange*.

[It is probable that the favorable results brought about by the above method in the treatment of sensitive dentin are due to the dehydration of the dentin and to the coagulation of the protoplasmic contents of the canaliculi by the carbolic acid, and not to cocain, for the only way in which cocain can obtund dentin is by anesthetizing the dentinal fibers, a condition which cannot take place if they are previously coagulated with carbolic acid.—ED.]

**Nature of the Attachment of an Implanted Tooth.**—The following transcript from Linderer's work (1842) shows the application of this research to the experiments of Hunter on the mode of union between an implanted tooth and its alveolus: "In order to study in detail the union of an implanted tooth, I made an experiment upon a dog, feeding him with red pigment. By this procedure the external surface of the root and also the walls of the canal would become colored if the tooth unites with the organism by means of bloodvessels; such a result would be conclusive proof. Many difficulties were met with in the attempt to make a good extraction, as well as in the implantation of the tooth, but after a few trials I succeeded with a front tooth. The tooth was successfully extracted and a small area at the end of the root was covered with periosteum. It was then replaced and ligated, and after three days the tooth had become firm. The feeding with red pigment was then begun, and it was continued for a week, when I extracted the tooth. On the outside as well as on the inside the tooth was of a slightly pinkish color. The vessels had also reunited. This case was particularly successful inasmuch as the end of the root was covered with periosteum."



**Quinin as a Styptic and Antiseptic.**—Marx (*Centralblatt für Chirurgie*, 1901, No. 45) states that as the result of his experiments he recommends quinin as a styptic and antiseptic. Everybody knows quinin as a specific protoplasm poison. The author states that space does not permit him to describe the experiments which proved the antiseptic powers of this drug. The styptic powers of quinin arise from the ability of its salts to agglutinate the red blood-corpuscles. For practical use the best preparation is a one or two per cent. solution of quinin hydrochlorid, which should be applied to the bleeding surface with a gauze compress or tampon. It is needless to state that its use should be confined to cases of parenchymatous bleeding. Careful observation has failed to show any injury to the tissues; in fact, no reaction of any kind was observed. The disinfecting power of quinin on infected wounds is but slight, but in aseptic wounds it absolutely stops parenchymatous bleeding, and has the additional power of rendering innocuous any germs that may have been conveyed into the wound by the operator's hands.—*Amer. Journ. of the Med. Sciences.*

**Formalin as a Disinfectant for the Hands.**—In a paper published in *American Medicine*, Dr. Charles P. Noble reports his experience with formalin as a disinfectant for the hands. After having used it for about a month, a severe inflammation appeared at the ends of all his fingers, involving the nails. This inflammation was so violent that serum formed under the nails, separating them from the underlying tissue, and it seemed for a time as though all the nails would be exfoliated. Under the influence of rest and elevation of the parts, together with an ointment of ichthyol, the inflammation subsided without suppuration. As a consequence, however, the nails separated on an average about one-third of their length from the distal extremity. The cause of the disturbance described has been traced by Dr. Noble to the use of formalin solution 1:500 as a disinfectant for the hands: and second, its prolonged contact with the finger-ends. The paper concludes with the following judicious statement: This experience is reported not to warn others against the use of formalin solution for hand-disinfection, but to teach the importance of avoiding prolonged contact with even a dilute solution of this agent.

**Hardening Plaster of Paris.**—A German patent has been granted for the treatment of articles of plaster of Paris with an aqueous solution of ammonium borate for the purpose of hardening them and making them impervious to water. As such a process will be useful to orthopedic surgeons, not only in making plaster splints last longer, but especially because it may serve to lessen the wear and tear on plaster bandages that occurs now whenever they come in contact with the discharges from the patient, we have thought it worth while to call special attention to the method. The hardening liquid may be either mingled with the plaster when it is being prepared, or it may be applied to the surface of the bandages with a brush after they have been put on. The solution is prepared by dissolving boric acid in warm water, and adding thereto sufficient ammonia to form the borate, which remains in the solution. The manner of using the solution is thus described: The saturation of the gypsum, or the painting of the plaster of Paris, is carried out in the cold. The objects are subsequently rinsed off and dried. The surface becomes hard after two days, and insoluble in water, while the induration in the interior advances more slowly.—*Medical News.*

**Treatment of Benign Facial Neuralgia.**—This variety of neuralgia, as is well known, is due to peripheral causes (humidity, evolution of the third molar, caries of the teeth), abnormalities of refraction, the wearing of an ill-fitting plate, and disturbances of the middle ear. Dr. Plicque, in his recent work, "Treatment of Neuralgias and Neuritis," advises the use of aconite.

He says, "Aconite is one of the most valuable agents for the treatment of this affection, but great care should be used in its administration, which should be stopped as soon as the first signs of engorgement of the face and tongue appear." Dr. Medclaff has recommended the following complex formula:

Tincture of aconite root,  
Tincture of colchicum seed,  
Tincture of belladonna, of each 3 grams.

Sig.—Six drops every six hours.

Veratrin is particularly indicated when the neuralgia is accompanied with cephalalgia, vertigo, and cerebral disturbances, in granule doses of two to three milligrams. In cases of this character the history of syphilis is generally found. Phosphate of sodium has been used by Crocq, and has given him excellent results. The formula he uses is as follows:

Sodium phosphate, 1 gram;  
Cherry-laurel water, 0.50 centigrams.

Sig.—Daily hypodermic injections of 1-3 c.c. of this solution.

External treatment varies according to the indications present. In certain forms of congestion the use of leeches is recommended, also the electric current. The use of ethyl chlorid spray is also indicated in certain cases, but it should be used with care, as it may bring about pigmentary deposits upon the face. It should, however, be remarked that this is a rare occurrence.

## DENTAL SOCIETY ANNOUNCEMENTS.

### COMING DENTAL MEETINGS—JULY AND AUGUST, 1902.

#### JULY.

CONNECTICUT ODONTOLOGICAL SOCIETY. New Haven. July 1st.

DELAWARE STATE DENTAL SOCIETY. Wilmington. July 2d.

MAINE DENTAL SOCIETY. Camden. Three days: July 15th, 16th, and 17th.

NATIONAL DENTAL ASSOCIATION. Niagara Falls. Four days: July 28th, 29th, 30th, and 31st.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS. Niagara Falls. July 25th.

NATIONAL ASSOCIATION OF DENTAL FACULTIES. Niagara Falls. July 24th.

NATIONAL ASSOCIATION OF COLORED DENTISTS. Washington, D. C. Three days: July 3d, 4th, and 5th.

NEW JERSEY STATE DENTAL SOCIETY. Asbury Park. Three days: July 16th, 17th, and 18th.

ONTARIO (EASTERN) DENTAL ASSOCIATION. Cornwall. Two days: July 9th and 10th.

PENNSYLVANIA STATE DENTAL SOCIETY. Bedford Springs. Three days: July 8th, 9th, and 10th.

SOUTH DAKOTA DENTAL SOCIETY. Watertown. Three days: July 8th, 9th, and 10th.

TENNESSEE DENTAL ASSOCIATION. Mont Eagle. Three days: July 8th, 9th, and 10th.

WISCONSIN STATE DENTAL SOCIETY. Milwaukee. Three days: July 15th, 16th, and 17th.

## AUGUST.

AMERICAN DENTAL SOCIETY OF EUROPE. August 12th to 15th.

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF DENTAL EDUCATION. August 15th to 20th.

VIRGINIA STATE DENTAL ASSOCIATION. Three days: August 5th, 6th, and 7th.

*EXAMINING BOARDS.*

DISTRICT OF COLUMBIA. Washington. July 8th.

NEW JERSEY. Newark. July 7th, 8th, and 9th.

SOUTH DAKOTA. Watertown. July 8th, 9th, and 10th.

VERMONT. Montpelier. July 9th.

---

NATIONAL DENTAL ASSOCIATION.

THE sixth annual session will be held in Niagara Falls, N. Y., July 28 to 31, 1902. A good program is being prepared and a large and profitable meeting is anticipated.

A rate of one fare and a third for the round trip, on the certificate plan, has been secured on all roads in the United States and part of Canada. In purchasing ticket going, full fare must be paid and a railroad *certificate* taken. This when properly signed entitles holder to return for one-third fare.

Tickets may be bought going from July 22d to 29th. The certificates for return journey may be used as late as August 4th.

A. H. PECK, *Rec. Sec'y*,  
Chicago.

---

NATIONAL DENTAL ASSOCIATION—SECTION IV.

THOSE who will present papers upon the subjects of Etiology, Physiology, Hygiene, Prophylaxis, and Electricity will kindly communicate with the chairman of the Section, J. D. Patterson, Kansas City, Mo., or to

EMMA EAMES CHASE, *Sec'y*,  
3334 Washington ave., St. Louis, Mo.

---

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

THE nineteenth annual convention of the National Association of Dental Faculties will convene in the ball-room of the International Hotel, Niagara Falls, N. Y., July 24th next. The executive committee will meet at 11 A. M. July 23d. All colleges are respectfully referred to the rule requiring that their annual announcement be in the hands of the executive committee at this meeting.

H. B. TILESTON, *Pres.*,  
S. W. FOSTER, *Sec'y Ex. Com.*,  
N. A. D. F.



## NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

THE nineteenth annual session will convene at the International Hotel, Niagara Falls, on Friday, July 25, 1902, and continue in session until adjournment. It is earnestly hoped that this session will see a larger representation of delegates than any heretofore held. Every state is asked to make provision now to send delegates.

Niagara Falls is an ideal place for meeting, and the International Hotel is the best, the service and appointments first-class; the rates will be according to location of room. Rates from \$3.50 to \$4.50 per day, being a reduction of fifty cents per day from regular rates. It is expected that the usual reduction in railroad fare will be arranged in time.

J. ALLEN OSMUN, *Sec'y.*

---

## INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF DENTAL EDUCATION.

TO DENTAL FACULTIES, DENTAL BOARDS, AND ALL WHO ARE INTERESTED IN DENTAL EDUCATION:

The second annual meeting of the International Dental Federation and International Commission of Dental Education will convene in Stockholm, Sweden, August 15 to 20, 1902.

On August 12th, immediately preceding the meeting of the Federation, the American Dental Society of Europe will convene. Within the same week the meeting of the International Advisory Boards of the Committee on Foreign Relations of the National Association of Dental Faculties of the United States will meet also. The date of the meeting of the National Dental Association of the United States has been changed to July 28th, and the meeting of the National Association of Dental Faculties to July 24th, both at Niagara Falls.

The importance of the meeting of the International Commission of Education, attended as it will be by the leading dental educators of Europe, and of the International Advisory Boards of the National Association of Dental Faculties of the United States, cannot be overestimated.

The relations of American dental institutions of learning to similar institutions throughout the world should be better understood, and it will be through the work of these meetings that the most approved methods of teaching at home and abroad will be fully considered and improved.

The action of the societies in both Europe and America in unanimously changing the dates of their meetings, the former having postponed their meeting ten days, while the latter meets eight days earlier than the date fixed last summer, is indeed gratifying to those most active in this great educational movement, as this arrangement of dates will make it possible for those who wish to attend the meetings at home and abroad to do so; besides, the action of the societies in changing dates shows the earnest desire of all to promote the interests of dental education throughout the world.

The following questions will be discussed by the International Commission of Education:

First: What preliminary knowledge is necessary for the dental student?

Second: What part of the medical and scientific subjects should be taken

up, and at what time of the period of training should the study of them be pursued?

Third: What is the importance of theoretical technical knowledge?

Fourth: What is the importance of practical technical knowledge?

Fifth: What are the most appropriate names for the several titles now used throughout the world?

It is hoped that all who are interested will give this matter immediate and careful attention. The meeting of the National Dental Association in this country, July 28th to 31st, makes it necessary that we should sail as soon after this as possible. We have decided upon the "Friederich der Grosse," of the North German Lloyd line, which sails July 31st from New York city, and is due at Bremen August 10th. Different priced berths on the steamer may be had, some good ones as low as \$80.00. These berths will be assigned in the order of registration; 25 per cent. of price should be mailed at the time of application. The booking arrangements have been made through A. A. Andridge, Ph.D., Pike Opera Building, Cincinnati. Dr. Andridge's experience with rates and time-tables, in addition to his private parties, will be at the disposal of any who write. Further questions in reference to the side trips, extension of tickets, return sailing dates, all remittances, etc., should be sent to Dr. Andridge, while all information about the associations and their work, programs, addresses, etc., should be directed to the president.

By the International Commission of Education.

TRUMAN W. BROPHY, *President*,  
Marshall Field Building, Chicago.

MAURICE ROY, *Secretary*,  
5 Rue Rouget de l'Isle, Paris.

## AMERICAN DENTAL SOCIETY OF EUROPE.

THE next meeting of the American Dental Society of Europe will be held in Stockholm, August 12th to 15th inclusive, 1902. A cordial invitation is extended to members of the American dental profession to meet with us.

This date will enable those attending the National meeting at Niagara Falls, July 28th to 31st, to attend the Stockholm meeting by sailing via Hamburg after that meeting.

L. J. MITCHELL, *Hon. Sec'y*,  
39 Upper Brook st., London, W.

Owing to the heavy booking of steamer berths, it would be well for intending voyagers to secure their return passages in advance. The best way to reach Stockholm is via Hamburg.

(1) Travel tickets only for the journey: Hamburg, Kiel, Censor, Copenhagen, Malmo, Stockholm, return to Hamburg by same route, £6 14s. 3d. per adult first class, £5 5s. 3d. per adult second class.

(2) Travel tickets only for the route, Hamburg, Lubeck, and steamer direct to Stockholm, returning to Hamburg by same route, £4 4s. 3d. per adult first class, £3 4s. 9d. per adult second class.

In the case of route No. 1, the validity is 45 days, and for route No. 2, the season. As early notice as possible should be given to secure accommodation. The times between Hamburg and Stockholm are as follows:

*Route No. 1.*—Dep. Hamburg 8.53 A.M. or 11.07 P.M., arr. Copenhagen 6.54 P.M. or 10.05 A.M. Dep. Copenhagen 7.45 P.M. or 11.15 A.M., arr. Stockholm 11.25 A.M. or 6.45 A.M.

*Route No. 2.*—Dep. Hamburg 12 NOON, 2 P.M., or 3.40 P.M., arr. Lubeck 1.21 P.M., 3.32 P.M., or 4.53 P.M. Dep. Lubeck about 6.15 P.M. Wednesdays

and Saturdays, occupying about forty-two hours, but times for coming season not yet fixed.

Any further information that may be desired could be obtained from Messrs. Cook & Sons, 261 and 262 Broadway, New York.

### CANADIAN DENTAL ASSOCIATION.

THE first meeting of all the dentists in Canada will be held in Montreal, September 16, 17, and 18, 1902. A National Board of Dental Examiners and a Canadian Dental Association will be organized. Some of the most eminent dentists in America will assist on the program. Dealers wishing to make an exhibit of goods may have space allotted them by applying to the secretary.

EUDORE DUBEAU, D.D.S.,  
396 St. Denis st., Montreal, Can.

### SOUTH DAKOTA STATE DENTAL SOCIETY.

THE South Dakota State Dental Society will meet at Watertown, S. D., July 8, 9, and 10, 1902. Porcelain work with gasoline furnaces will be one of the features of entertainment. Orthodontia will also receive special mention. Clinics by leading dentists in gold and amalgam filling will be given.

G. W. COLLINS, *Acting Sec'y.*

### TENNESSEE DENTAL ASSOCIATION.

THE thirty-fifth annual meeting of the Tennessee Dental Association will take place at Mont Eagle, Tenn., beginning Tuesday, July 8, 1902, and continuing three days.

A program of unusual interest, both as to papers and clinics, has been prepared. Mont Eagle is a most popular summer resort, and thus a social as well as a professional treat is in store for those who attend. The railroads have made a one-and-one-third rate on the certificate plan and hotel accommodations are up to date and reasonable.

All ethical dentists are invited to be present and take part in the proceedings.

A. SIDNEY PAGE, *Sec'y*,  
Columbia, Tenn.

### WISCONSIN STATE DENTAL SOCIETY.

THE thirty-second annual meeting of the Wisconsin State Dental Society will be held at Milwaukee, Wis., July 15, 16, and 17, 1902. A cordial invitation is extended to all members of the profession to be present.

W. H. MUELLER, *Sec'y*,  
21 W. Main st., Madison, Wis.

### NEW JERSEY STATE DENTAL SOCIETY.

THE thirty-second annual meeting of the New Jersey State Dental Society will be held at the Auditorium, Asbury Park, commencing 10 A.M., Wednesday, July 16, 1902, and continuing the 17th and 18th. There will be good



papers read and clinics performed. Sixty-four exhibitors will present the newest and best for the dental profession.

The Columbia Hotel will be headquarters, with rates of \$2.50 to \$3.00 per day.

CHARLES A. MEEKER, *Sec'y*,

HERBERT S. SUTPHEN, *Asst. Sec'y*.

---

### VIRGINIA STATE DENTAL ASSOCIATION.

THE Virginia State Dental Association will hold its next annual session at Old Point Comfort on August 5, 6, and 7, 1902. This date follows the adjournment of the National Association at Niagara, and will give a fine opportunity for all desiring to continue their summer outing at most reasonable rates. All members of the profession are cordially invited to attend.

GEO. F. KEESEE, *Sec'y*.

---

### NEW JERSEY BOARD OF DENTAL EXAMINERS.

THE New Jersey State Board of Registration and Examination in Dentistry will hold their next examination on the following dates: Monday, July 7th, Tuesday, 8th, and Wednesday, 9th, 1902, at the office of the secretary, J. Allen Osmun, 588 Broad street, Newark, N. J.

All applicants for examination must have their application in two weeks prior to the examination. J. ALLEN OSMUN, *Sec'y Dental Commission*.

---

### SOUTH DAKOTA BOARD OF DENTAL EXAMINERS.

THE next meeting of the South Dakota State Board of Dental Examiners for the examination of candidates will be held at Watertown, July 8, 9, and 10, 1902. No applicant will be admitted unless he present satisfactory evidence of having been in the active practice of dentistry continuously for at least three years immediately preceding the date of examination, or that he is a graduate from a reputable dental school. All applicants must bring operating outfit, dental engine, and materials, prepared to do fillings of all kinds, or bridge-work.

Applications must be made to the secretary in writing at least one week previous to the date of examination. Candidates must be on hand at 9 A.M., July 8, 1902, at Dr. C. W. Stutenroth's office. None will be received later.

G. W. COLLINS, *Sec'y*,

Vermillion, S. D.

---

### VERMONT BOARD OF DENTAL EXAMINERS.

A MEETING of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, July 9, 1902, at 2 P.M. for the examination of candidates to practice dentistry. The examination will be in writing, and will include anatomy, physiology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anesthesia, operative and prosthetic dentistry, together with an operation in the mouth. Candidates must come prepared with instruments, rubber dam, and gold.

Applications, together with the fee, ten dollars, must be filed with the secretary on or before July 1st.

GEO. F. CHENEY, *Sec'y*,

St. Johnsbury, Vt.

## PENNSYLVANIA STATE DENTAL SOCIETY.

THE Pennsylvania State Dental Society will hold its regular annual meeting at Bedford Springs Hotel, Bedford, Pa., July 8, 9, and 10, 1902.

R. H. NONES, *Ch'man Ex. Com.*

## NORTHERN IOWA DENTAL SOCIETY.

THE eighth annual meeting of the Northern Iowa Dental Society will be held at Cedar Rapids, Iowa, September 2, 3, and 4, 1902. An extraordinarily interesting program is assured.

Special railroad and hotel rates.

W. G. CRANDALL, *Sec'y*,  
Spencer, Iowa.

## BOARD OF DENTAL EXAMINERS FOR HAWAII.

THE Board of Dental Examiners for the Territory of Hawaii, U. S. A., consists of the following members: M. E. Grossman, D.D.S., president; George H. Huddy, D.D.S., secretary; W. E. Taylor, M.D.

The examination fee is thirty dollars and registration fee five dollars. No examination is required of graduates from colleges recognized by the National Association of Dental Faculties.

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

**Baumgarten** (E.) Ueber Schlingbeschwerden bei Erkrankungen des oberen und unteren Rachenteiles. Halle a. S., 1902, C. Margold, 22 pp. 8°.

**Compendium** der allgemeinen Zahnheilkunde in Fragen und Antworten. Gesammelt und Zusammengestellt von A. L. Kowler. München [1902], J. Velisch, 188 pp. 8°.

**Greve.** Die Zahn- und Mundleiden, ihre Ursachen und Bekämpfung Gemeinverständliche Darstellung. München, 1902, A. Gemelin, 33 pp. 8°.

**Mamlok** (H. J.) Die Porzellan-Fuellung, Leitfaden für die Füllung der Zähne mit Porzellan und dessen Anwendung in einigen besonderen Fällen. Berlin, 1902, O. & E. Klett, 52 pp. 8°.

**de la Sota y Lastra** (R.) Manual teórico y práctico de las enfermedades de la boca y de la faringe. 2. v. Sevilla, 1902, vii, 723 pp. 8°.

**Transactions** of the Odontological Society of Great Britain. London, 1900-1901. J. Bale, etc., limited, 2 l., 264, 36 pp., 1 port. 8°.

**Aikin** (W. A.) The separate functions of different parts of the Rima glottidis. J. Anat. & Physiol., Lond., 1901-2, xxxvi, 253-256, 2 pl.—**Allan** (G. S.) Extension for prevention. Internat. Dent. J., Phila., 1902, xxiii, 311-321.—**Anderson** (R. J.) The relationship of the premaxilla in bears. Internat. Monatschr., f. Anat. u. Physiol., Leipz., 1901-2, xix, 167-175, 1 pl.—**Arkövy.** Discussion über die Erfahrungen mit Nervociden. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1901, xvii, 527-

530.—**Arkövy** (J.) Ueber Leptothrix racemosa (Vincentini). *Ibid* : 1902, xviii, 8-33, 1 pl.—**Arkövy** (J.) Aphorismen zur Therapie der Pulpagangrän. *Ibid* : 33-42.—**Barker** (A. M.) Report of committee on operative dentistry. Pacific Dent. Gaz., San Fran., 1902, x, 217-221.—**Bartlett** (W.) Historical résumé of the procedures intended for the repair of cleft-palate, with mention of a case. Dental Rev., Chicago, 1902, xvi, 345-351.—**Batut.** Trois cas d'actinomycose de la

- face. *Lyon méd.*, 1902, xcvi, 533.—**Bedoya** (N.) Necrosis del maxilar inferior. *Crón. méd.*, Lima, 1902, xix, 88.—**Beffel** (J. M.) Report of a case of leucoplakia buccalis, with remarks on its histo-pathology. *Chicago Clinic*, 1902, xv, 129-131.—**Bennett** (F. J.) Deafness dependent on dental lesion. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 161-166.—**Bennett** (N. G.) Heredity and dental disease. *Ibid.*: 127-156.—**Bentley** (C. E.) Lesions peculiar to primary dentition. *Pacific Dent. Gaz.*, San Fran., 1902, x, 321-326.—**Berger** (P.) Bec-de-lièvre unilatéral complexe. *Bull. et mém. Soc. de chir. de Par.*, 1902, n. s., xxviii, 448-450.—**Besnoit**. Actinomycose du maxillaire chez un bœuf. *Toulouse méd.*, 1902, 2. s., iv, 70.—**Biondi** (D.) Plastica endorale con lembo muscolo-mucoso linguale. *Atti d. r. Accad. d. fisiocrit. in Siena*, 1901, 4. s., xiii, 6-8.—**Biousse** (E.) Quelques considérations sur l'anesthésie chloroformique. *Odontologie*, Par., 1902, 2. s., xiv, 261-275.—**Black** (K.) A fatal case of angina Ludovici following dental caries. *Guy's Hosp. Gaz.*, Lond., 1902, xvi, 171.—**Bloch** (A.) Quelques observations de kystes paradentaires; de leur traitement. *Rev. de stomatol.*, Par., 1902, ix, 185-194.—**Bosart** (H. J.) A successful method of obtaining a perfect matrix for porcelain inlay work. *Pacific Dent. Gaz.*, San Fran., 1902, x, 326.—**Bouglé** (J.) Volumineuse épulis du maxillaire inférieur. *Bull. et mém. Soc. anat. de Par.*, 1901, lxxvi, 676-678.—**Boyd**. Notes on a case of mal-united fracture of the mandible relieved by operation. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 226-230.—**Broca** (A.) A quel âge faut-il opérer un bec-de-lièvre? *J. de méd. et chir. prat.*, Par., 1902, lxxiii, 332-336.—**Brophy** (T. W.) Conservatism in oral surgery. *Dental Summary*, Toledo, 1902, xxii, 241-250.—**Brouardel** (P.) La mort par le chloroforme. *Ann. d'hyg.*, Par., 1902, 3. s., xlvii, 315-323.—**Brown** (G. V. I.) Surgical correction of malformation and speech defects due to or associated with harelip and cleft palate. *Internat. Dent. J.*, Phila., 1902, xxiii, 301-311, 6 pl.—**Bruck** (W. W.) Die Thätigkeit Abtheilung für conservirende Zahnheilkunde am Zahnärztlichen Institut der Königlichen Universität Breslau im Sommersemester 1901 und im Wintersemester, 1901-1902.—*Deutsche Monatschr. f. Zahn.*, Leipzig, 1902, xx, 159-164.—**Brunsmann**. Operationen ohne vorherige Einwilligung des Patienten. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 508.—**Buchanan** (T. D.) Chloroform and ether anesthesia. *N. Am. J. Homœop.*, N. Y., 1902, i, 306-310.—**Buckley** (J. P.) Chemistry of bleaching teeth. *Dental Rev.*, Chicago, 1902, xvi, 365-372.—**Campbell** (H.) The influence of mastication on the jaws and their appendages. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 337; 385.—**Canning** (H. A. E.) Inlays. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 197-203.—**Capdepont**. Quelques considérations anatomiques et pathologiques sur le sac folliculaire. *Rev. de stomatol.*, Par., 1902, ix, 134; 201.—**Capon** (W. A.) The difference in methods of high- and low-fusing porcelain for filling teeth. *Dental Brief*, Phila., 1902, vii, 247-254.—**Carter** (L. A.) The use of non-adhesive gold foil in filling teeth. *Austral. J. Dent.*, Melbourne, 1901-2, v, 179-182.—**Case** (C. S.) Orthopédie dentofaciale. *Odontologie*, Par., 1902, 2. s., xiv, 159; 337.—**Catt** (E.) Capping pulps. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 226.—**Caush** (D. E.) The development of the pulp nodule. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 208-223.—**Cheeseman** (F. E.) Method in use of removable matrix for contour gold fillings. *Dental Rev.*, Chicago, 1902, xvi, 372-374.—**Choquet** (J.) The non-specificity of micro-organisms in dental decay. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 66-77.—**Cline** (L. C.) Suppurative disease of the antrum of Highmore and its diagnosis. [Abstr.] *Indiana M. J.*, Indianapolis, 1901-2, xx, 416.—**Colombini**. Ueber einige feltsecernierende Drüsen der Mundschleimhaut des Menschen. *Monatsh. f. prakt. Dermat.*, Hamb., 1902, xxxiv, 423-437.—**Colyer** (S.) Oral sepsis: and some of its effects. *Dental Rec.*, Lond., 1902, xxii, 200-206.—**Constant**. Ætiology of superior protrusion. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 42-51. [Discussion], 100-121.—**Cooke** (W. P.) The ethics and prosthetics of crown and bridgework. *Items Interest*, N. Y., 1902, xxiii, 362-368. [Discussion], 375-386.—**Cotterell** (V.) Composite odontome. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 31.—**—**Inverted left upper wisdom tooth. *Ibid.*: 32.—**Crow** (McF.) Extracts from an old journal. [Dental history.] *Dental Digest*, Chicago, 1902, viii, 368-372.—**Curtis & Gaudier**. Un cas de goître lingual. *Rev. hebdom. de laryngol.* [etc.], Par., 1902, i, 417-432.—**Darvis** (W. C.) Studies in therapeutics. *Items Interest*, N. Y., 1902, xxiv, 321-324.—**Debrie** (E.) Bec-de-lièvre congénital compliqué de fissure alvéolo-palatine avec saillie et torsion des os intermaxillaires internes; opération par les procédés de Duplay et Mirault; guérison. *Parole. Rev. internat. de rhinol.* [etc.], Par., 1902, n. s., iv, 144-157.—**Deck** (E. F.) The removal of the dental pulp. *Guy's Hosp. Gaz.*, Lond., 1902, xvi, 178-181.—**Delcominette**. L'amygdalite pharyngée aiguë primitive. *Gaz. méd. belge*, Liège, 1901-2, xiv, 284.—**Delorme**. Ulcérations buccales. *Bull. et mém. Soc. de chir. de Par.*, 1902, n. s., xxviii, 413.—**Dentistry** as a specialty of medicine. [Edit.] *Dental Brief*, Phila., 1902, vii, 270-273.—**Derocque**. A propos d'anesthésie générale. *Normandie méd.*, Rouen, 1902, xvii, 158-162.—**Derocque & Nicolle**. Un cas d'hypertrophie épithéliale piliforme de la langue. *Rev. méd. de Normandie*, Rouen, 1902, 194.—**Dickey** (W. A.) A plea for a more intimate relation



- between physician and dentist. *Dental Summary*, Toledo, 1902, xxii, 255-259.—**von Dobrzyniecki** (A.) Beiträge zur Behandlung der chronischen Alveolarabscesse. *Wien. med. Wchnschr.*, 1902, lii, 853-855.—**Dopter** (C.) Note sur la contagion de l'angine et de la stomatite de Vincent. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1902, 3. s., xix, 403.—**Dowsett** (E. B.) Dental cyst arising from the root of a living tooth. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 60-65.—**Duckworth** (W. H. L.) Some dental rudiments in human crania. *Ibid.*: 89-100.—**Duret** (H.) La chloroformisation chez les cardiaques. *J. d. sc. méd. de Lille*, 1902, i, 329-340.—**Ehrmann**. Perforation congénitale circulaire du voile du palais, avec extrême minceur des tissus; staphyloporrhaphie par le procédé en deux temps. *Bull. et mém. Soc. de chir. de Par.*, 1902, n. s., xxviii, 410-413.—**Eoff** (C. W.) A study of gold. *Dental Rec.*, Chicago, 1902, xvi, 200-202.—**Etterlen** (J.) Polype muqueux du voile du palais et cancroïde de la langue. *Lyon méd.*, 1902, xcvi, 565.—**Fiori** (P.) Nota clinico-istologica sopra una varietà di sarcoma del mascellare inferiore. *Boll. med. trentino*, Trento, 1902, xxi, 91-101.—**Flint** (J. M.) The ducts of the human submaxillary gland. *Am. J. Anat.*, Balt., 1901-2, i, 269-295.—The blood-vessels of the submaxillary gland and their development. *J. Med. Research*, Bost., 1902, vii, 464-473, 1 pl.—**Förberg** (E.) Ist die systematische Extraction der ersten permanenten Molaren gerechtfertigt? *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1901, xvii, 490-515, 13 pl.—*Also, transl.*: *Odontologie*, Par., 1902, 2. s., xiv, 309-336, 7 pl.—**Fontana** (A.) Ueber die Wirkung des Eucain B. auf die Geschmacksorgane. *Ztschr. f. Psychol. u. Physiol. d. Sinnesorg.*, Leipzig, 1902, xxviii, 253-260.—**Forshaw** (C. F.) Tumour of the superior maxilla. *Med. Press & Circ.*, Lond., 1902, n. s., lxxiii, 404.—**Franz** (H.) The college-bred dentist and his duty in guarding the name of his profession. *Dental Rev.*, Chicago, 1902, xvi, 352-359. [Discussion], 383-393.—Porcelain inlays. *Ibid.*: 182-190.—**Frigoli** (L.) Un caso di empiema dell'antro di Highmore. *Boll. d. clin.*, Milano, 1902, xix, 120-123.—**Füth** (H.) Ueber eine angeborene Geschwulstbildung perithelialer Natur an Oberkieferzahnfleisch eines zwei Tage alten Mädchens mit Hineinbeziehung des Schmelzkeimes. *Beitr. z. Geburtsh. u. Gynaek.*, Leipzig, 1902, vi, 82-97, 2 pl.—**Gerasimoff** (N. I.) [Branny desquamation of the oral mucosa as a symptom of measles. *Dietsk. med.*, Mosk., 1901, vi, 407-413.—**Glassington** (C. W.) A case of composite odontome. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 401-404.—**Goldan** (S. O.) Nitrous oxide and oxygen as a surgical anæsthetic. Description of a new apparatus for administering these gases, and report of 100 operations, the narcosis lasting half an hour and upward. *Tr. Coll. Phys.*, Phila., 1901, 3. s., xxiii, 83-98.—Observations in the use of the combined cases of pure nitrogen, monoxid and oxygen for the extraction of teeth. *Dental Brief*, Phila., 1902, vii, 241-247.—**Goldie** (G. J.) & **Haughton** (W. S.) The scope of X-rays in dental pathology. *Tr. Roy. Acad. M. Ireland*, Dublin, 1900-1901, xix, 284-313, 2 l., 4 pl.—**Goodale** (J. L.) The endothelial phagocytes of the tonsillar ring. *J. Med. Research*, Bost., 1902, vii, 394-404.—**Gordan** (G. B.) Among the Honduranians, ancient and modern. *Internat. Dent. J.*, Phila., 1902, xxiii, 321-330.—**Goslee** (H. J.) The shell or telescope crown in combination with porcelain. *Items Interest*, N. Y., 1902, xxiii, 326-335.—The ethics and prosthetics of crown and bridgework. *Ibid.*: 343-355. [Discussion], 375-386.—**Grandy** (L. B.) Dr. Long and the hall of fame. *Atlanta Jour.-Rec. Med.*, 1902-3, iv, 111-113.—**Grant** (J. H.) Prophylaxis, or prevention of dental caries. *Texas Dent. J.*, Dallas, 1902, xx, 31-38.—**Grayston** (W. C.) Accidents during nitrous oxide anæsthesia. *Items Interest*, N. Y., 1902, xxiv, 324.—The density of gold fillings. *Dental Rec.*, Lond., 1902, xxii, 160-163.—**Greve**. Ueber verschiedene Methoden, die Gypsmodelle dauerhafter und bemalbar zu machen. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 137-140.—**Gritman** (A. De W.) The articulation of artificial teeth. *Items Interest*, N. Y., 1902, xxiii, 368-374.—**Halle** (M.) Zur Therapie der Pharyngitis granulosa und der Pharyngitis lateralis. *Berl. klin. Wchnschr.*, 1902, xxxix, 379-381.—**Hallopeau & Fournier** (E.) Contribution à l'étude des atrophies cuspidiennes systématisées de la seconde dentition. *Ann. de dermat. et syph.*, Par., 1902, 4. s., iii, 419-421.—**Hart** (Olive E.) Correcting speech defects. *West. Dent. J.*, Kansas City, 1902, xvi, 152-155.—**Hele** (W.) A phase of dental practice. *Austral. J. Dent.*, Melbourne, 1901-2, v, 186-188.—**Henri** (V.) & **L. Malloizel**. De l'action de l'atropine sur la sécrétion de la salive sous-maxillaire du chien. *Compt. rend. Soc. de biol.*, Par., 1902, 11. s., iv, 467.—**Henry** (T. F.) Why fillings fail. *West. Dent. J.*, Kansas City, 1902, xvi, 145-152.—**Hentze**. Ueber dentome. *Odontol. Bl.*, Berl., 1902-3, vii, 41-49.—**Herbst** (E.) Zwei neue Verfahren, die Ecke eines Schneidezahnes zu ersetzen. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 140-144.—Die Befestigung lockerer Zähne. *Ibid.*: 144-148.—**Hern** (W.) Curious growth in the mouth. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 160.—Mummy jaw bones. *Ibid.*: 82-84.—**Hill** (D. T.) Bridge anchorage without band or crown. *Items Interest*, N. Y., 1902, xxiii, 341.—**Hoff** (N. S.) Some of the things which make a dentist professional. *Dental Reg.*, Cincinnati, 1902, lvi, 217-228.—**Humphry** (G. M.) Unilateral hypertrophy of the gums, associated with other abnormalities, chiefly hypertrophic and unilateral. *Select. essays and monog.*, Lond., 1901, 229-236.—**Jackson** (M.) Some impres-

- sion materials used in dentistry. *Brit. J. Dent. Sc. Lond.*, 1902, xlv, 300-307.—**Jacquet** (L.) Nature et traitement de la pelade; la pelade d'origine dentaire. *Ann. de dermat. et syph.*, Par., 1902, 4. s., iii, 97; 180.—La pelade d'origine gingivo-dentaire. *Bull. Soc. franç. de dermat. et syph.*, Par., 1902, xiii, 76-86.—*Also*: *Ann. de dermat. et syph.*, Par., 1902, 4. s., iii, 245-255.—**Jeffery** (L.) Dental bookkeeping. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 203-205.—**Johnston** (R. H.) Primary tuberculosis of the tonsils. *J. Eye, Ear, and Throat Dis.*, Balt., 1902, vii, 42.—**Jousset** (A.) Pathologie de l'amygdale linguale. *Rev. internat. de méd. et de chir.*, Par., 1902, xiii, 131-133.—**Kantorowicz** (R.) Die Verwendbarkeit der Chloroform-Sauerstoff-Narkose beim Hunde. *Arch. f. wissenschaftl. u. prakt. Thierh.*, Berl., 1902, xxviii, 299-311.—**Kappel** (W.) Ein neuer Bunsenbrenner. *Zahntech. Rundschau*, Berl., 1902, No. 505.—**Kersting** (G.) Abnutzung der Zähne. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 508.—**Kittow** (W.) The condition of children's teeth; and the remedy. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 222-225.—**Knowles** (W. A.) A case of sarcomatous epulis. *Pacific Dent. Gaz.*, San Fran., 1902, x, 230-232.—**Kowler**. Die Bedeutung der Zahnärzte in der Armee. *Deutsche Zahnärztl. Ztg.*, München, 1902, No. 11.—**Krebs** (G.) Ein Fall von Pharynxgangrän (Angina Vincenti?) mit chronischem Verlauf; Heilung nach operativer Therapie. *Deutsche med. Wchnschr.*, Leipzig, u. Berl., 1902, xxviii, 310.—**Krojanka** (M.) Wohlthäter der Menschheit in Ungarn. *Zahntech. Rundschau*, Berl., 1902, No. 508.—**Landgraf** (L.) Ueber die Verwendung der Wurzelschraube. *Wien. Zahnärztl. Monatschr.*, 1902, iv, 149-157.—**Lange** (A.) Ueber den Bau und die Funktion der Speicheldrüsen bei den Gastropoden. *Anat. Hefte*, Wiesb., 1902, lxi, 85-153, 1 pl.—**Lanzillotti Buonsanti** (G.) L'afra epizootica e la sua trasmissione all'uomo. *Gazz. med. ital.*, Torino, 1902, liii, 144-147.—**Law** (W. J.) The effect of the operative examination for L.D.S., Eng., upon the student. *Dental Rec.*, Lond., 1902, xxii, 193-195.—**Le Dentu**. Un cas d'anesthésie générale avec l'éther chez un cardiaque. *Bull. Acad. de méd.*, Par., 1902, 3. s., xlvii, 548-552.—**Leist** (G.) Kieferbruch, vollständige Heilung nach Anfertigung einer Piece. *Zahntech. Reform*, Berl., 1902, xxi, 70.—**Lemere** (H. B.) The lingual tonsil. *Med. Herald*, St. Joseph, 1902, n. s., xxi, 183-187.—**Liautard** (A.) Tic du nerf maxillaire supérieur. *Bull. Soc. centr. de med. vét.*, Par., 1902, n. s., xx, 183.—**Lind**. Ein neues Lokalanästhetikum. *Deutsche Zahnärztl. Ztg.*, München, 1902, No. 12.—**Lloyd** (R.) The functions of the mouth in speech. *Dental Rec.*, Lond., 1902, xxii, 152-160.—**Loewe** (M.) Moderne Mundwässer. *Deutsche Zahnärztl. Ztg.*, München, 1902, No. 10; 11.—**Lopriore** (S.) Frattura esposta del mascellare inferiore guarita in tempo brevissimo. *Gazz. d. osp.*, Milano, 1902, xxiii, 477-479.—**Lucas** (R. C.) On a method of stretching, dividing, or exercising a portion of the lingual nerve, with cases. *Guy's Hosp. Rep.*, Lond., 1901-2, 3. s., xli, 1-9.—**Luten** (A.) Influenza, baring, kind met tanden geboren. *Tijdschr. v. prakt. verlosk.*, Haarlem, 1902-3, vi, 12.—**McKenney** (W. T.) Putrescent pulp almost fatal. *Dental Digest*, Chicago, 1902, viii, 372-374.—**Maas** (F.) Zur Operation der Nasenrachentumoren. *N. Yorker med. Monatschr.*, 1902, xiv, 143-150. [Discussion], 177-179.—**Magli** (E.) Su di un caso di actinomycosi. *Riv. crit. di clin. med.*, Firenze, 1902, iii, 358; 376.—**Maly** (G. W.) Zur Histologie der Tumoren in der Zungenbeinegend. *Ztschr. f. Heilk.*, Wien, u. Leipzig, 1902, xxiii, Abth. f. Chir. [etc.], 31-38, 1 pl.—**Manno** (A.) Sopra il modo onde si perfora e scompare la membrana faringea negli embrioni di pollo. *Studi sassaresi*, Sassari, 1902, ii, 126-133.—**Martini** (U.) Sopra un caso di fibroma del palato molle associato a polipi nasali; operato per la via del naso. *Gaz. d. osp.*, Milano, 1902, xxiii, 383.—**Miller** (W. D.) Ueber Herstellungsmethoden gewisser Zahn- und Kieferpräparate. *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1901, xvii, 445-471, 2 pl.—**Mills** (W. A.) Oral sepsis, necrobiosis, antiseptics, and prophylaxis. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 289-299.—**Minervini** (R.) Nodulo linfangiomatoso recidivante dell'apice della lingua. *Boll. d. r. Accad. med. di Genova*, 1901, xvi, 351-371.—**Mints** (V. M.) [Primary tuberculosis of the parotid gland.] *Vestnik Khir.*, Mosk., 1901, ii, 455-458.—**Méthode** du professeur Angle pour la régularisation et la rétention des dents et pour le traitement des fractures des mâchoires. *Progrès dent.*, Par., 1902, xxix, 108-125.—**Monod**. Hypertrophie aiguë énorme de la langue. *Mém. et bull. Soc. de méd. et chir. de Bordeaux* (1901), 1902, 140.—**Müller** (A.) Ein Beitrag zur Herabsetzung der Empfindlichkeit des Dentins. *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1901, xvii, 520-522.—**Neuhoff** (F.) Aphthous stomatitis. *St. Louis M. Rev.*, 1902, xlv, 235-237.—**Nolan** (H. R.) The value of diagnostic signs of suppuration in the maxillary antrum. *Australas. M. Gaz.*, Sydney, 1902, xxi, 72.—**von Noorden** (C.) Ueber para-Amidobenzoesaure-Ester als locales Anästhetikum. *Berl. klin. Wchnschr.*, 1902, xxxix, 373-375.—**Northercroft** (G.) An impression of the British Dental Association (1901) Loan Museum. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 205-210.—**Pawelz** (G. H.) Ueber Cementfüllungen und deren Zersetzung im Muude. *Zahntech. Reform*, Berl., 1902, xxi, 81-83.—**Payne** (J. L.) List of specimens added to the Dental Museum. *Guy's Hosp. Rep.*, Lond., 1901-2, 3. s., xli, 283-290.—**Peeso** (F. A.) The ethics and prosthetics of crown and bridgework. *Items Interest*, N. Y., 1902, xxiii, 355-362. [Discussion], 375-386.—**Petit** (G.) & **Almy**. Sarcome ostéoïde



- de la mâchoire supérieure, chez le chien. Bull. et mém. Soc. anat. de Par., 1901, lxxvi, 686.—**Petrucchi** (N.) Sulla produzione sotto-linguale. *Pediatria*, Napoli, 1902, x, 154.—**Pitzorno** (M.) Sulla formazione delle cavità cefaliche premandibolari in *Gongylus ocellatus*. Studi sassaresi, Sassari, 1902, ii, 116-125.—**Pöhn** (E.) Beitrag zur Behandlung nerv- und wurzelkranker Zähne. *Zahnkunst*, Bresl., 1902, vi, Nos. 12; 14; 15.—**Port** (G.) Nasenprothesen. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 161-170.
- Die Herstellung dauerhafter und bemalbarer Modelle. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1901, xvii, 482-489.—**Powell** (T. E.) Influence of sexuality in the development of the teeth. *Pacific Dent. Gaz.*, San Fran., 1902, x, 242-247.—Also: *Dental Rev.*, Chicago, 1902, xvi, 177-181.—**Raoult** (A.) Diagnostic des ulcérations de l'amygdale palatine. *Rev. méd. de l'est*, Nancy, 1902, xxxiv, 120; 208; 250.—**Reichert** (M.) Ueber eine neue Untersuchungsmethode der Oberkieferhöhle mittels des Antroskops. *Berl. klin. Wchnschr.*, 1902, xxxix, 401-404.—**Reid** (J. G.) The use of gold in cavities located in the cementum. *Dental Rev.*, Chicago, 1902, xvi, 363-365. [Discussion], 397-409.—**Rhein** (M. L.) The bearing of oral pathology on general medicine. *Albany M. Ann.*, 1902, xxiii, 249-256.—**Riegner** (H.) Das Aufsetzen von Kronen- und Brückenarbeiten mit Guttapercha und die Halbringkrone. *Deutsche Monatsschr. f. Zahnh.*, Leipz., 1902, xx, 154-159.—**Roach** (F. E.) Crowns without bands. *Dental Rev.*, Chicago, 1902, xvi, 359-362. [Discussion], 393-397.—**Robertson** (J.) Tuberculosis. *Pacific Dent. Gaz.*, San Fran., 1902, x, 289-294.—**Robin** (P.) L'unité morphologique de la dentition temporaire des différentes races humaines. *Rev. de stomatol.*, Par., 1902, ix, 194-200.—**Rodman** (W. L.) Sarcoma of the parotid. *Ann. Surg.*, Phila., 1902, xxxv, 656.—**Röse** (C.) In wie weit ist Ekströms Kritik an der schwedischen Sammelstatistik über Zahnaries berechtigt? *Deutsche zahnärztl. Ztg.*, München, 1902, No. 12; 13.—Moderne Mundwasseruntersuchungen. *Centralbl. f. Bakteriöl.* [etc.], 1. Abt., Jena, 1902, xxxi, 473-476.—**Rohrbach** (J.) Trifirmolpastillen. *Zahntech. Rundschau*, Berl., 1902, No. 511.—**Rolleston** (H. D.) Case of peculiar pigmentation of the oral surface of the lower lip. *Med. Press & Circ.*, Lond., 1902, n. s., lxxiii, 459.—**Rygge** (J.) Ueber die Innervation der Zahnpulpa. *Internat. Monatsschr. f. Anat. u. Physiol.*, Leipz., 1901-2, xix, 158-166, 1 pl.—**Sage** (F. W.) The real attitude of the dental specialty toward medicine. *Dental Reg.*, Cincin., 1902, lvi, 236-247.—**Salamon** (H.) Neues Verfahren zur Herstellung von Metallmodellen. *J. f. Heilk.*, Berl., 1902, xvii, 60-62.—**Scheff** (J.) Ueber einen abnormen Verlauf des Canalis mandibularis. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 1-7, 1 pl.—Zwei Krückenhebel (für den Weisheitszahn und für Wurzeln). *Ibid.*: 472-482.—**Schelling** (C.) An obscure case of dental trouble diagnosed by X-rays. *Tr. Odont. Soc. Gt. Brit.*, Lond., 1900-1901, n. s., xxxiii, 56-59.—**Scherb** (G.) Goutte aiguë du pharynx. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1902, 3. s., xix, 381.—**Schmidt** (H.) Nickel-Kupfer. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 505.—**Schreier** (E.) Ein neuer Apparat, welcher es ermöglicht, am Handstücke der Bohrmaschine den zu ihrem Antriebe verwendeten Elektromotor zu schalten. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1901, xvii, 515-520.—**Schröder** (H.) Einleitende Untersuchungen zum Kapitel: Die Prognathie des oberen Gesichtes. Cor.-Bl. f. Zahnärzte, Berl., 1902, xxxi, 97-137.—**Schwarze** (A.) Ueber Paraffinprothesen. *Deutsche Monatsschr. f. Zahnh.*, Leipz., 1902, xx, 178-181.—**Shaver** (A. E.) Pyorrhea alveolaris. *Dominion Dent. J.*, Toronto, 1902, xiv, 148-152.—**Sibley** (F. L.) Arterio-sclerosis in pyorrhea alveolaris. *Dental Office and Lab.*, Phila., 1902, 4. s., xvi, 65-68.—**Siredey** (A.) & **C. Mantoux**. Stomatite ulcéro-membraneuse staphylo-palatine avec bacilles fusiformes et spirilles de Vincent; albuminurie; traitement par le bleu de méthylène. *Parole. Rev. internat. de rhinol.* [etc.], J. Par., 1902, n. s., iv, 164-171.—**Sloan** (T. G.) Chloroform anæsthesia. *Yale M. J.*, N. Haven, 1901-2, viii, 329-334.—**Smith** (A. H.) Cementum. *Dental Rec.*, Lond., 1902, xxii, 150; 196.—**Smith** (D. D.) Oral prophylaxis. *Dental Digest*, Chicago, 1902, viii, 347-366.—**Smith** (H. A.) Recurrence of caries under gold fillings. *Dental Reg.*, Cincin., 1902, lvi, 229-236.—**Söderberg** (T.) Verschiedenes über Nervocidin. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1901, xvii, 530-535.—**Sontag** (A. F.) A mucous cyst, necessitating removal of ramus and part of body of the lower maxilla. *Texas Dent. J.*, Dallas, 1902, xx, 29-31.—**Spence** (S. J.) Experiments with modeling composition. *Items Interest*, N. Y., 1902, xxiii, 336-341.—**Spriestersbach** (W.) "Zahntechnische Lehranstalten" und ihre Zöglinge. *Zahntech. Rundschau*, Berl., 1902, No. 508.—**Stalder** (J. W.) Suppurative inflammation of the antrum of Highmore. *Pacific Dent. Gaz.*, San Fran., 1902, x, 232-236.—**Stauber** (F.) A shell crown with a porcelain facing. *Dental Brief*, Phila., 1902, vii, 254.—**Stehr**. Tuberculose und Zahnheilkunde. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 504; 505; 506.—**Stephan** (J. F.) Nitrous oxid and oxygen as an anesthetic. *Cleveland M. J.*, 1902, i, 135-140.—**Sternfeld** (A.) Die systematische Extraction des ersten permanenten Molaren ist in der überwiegenden Mehrzahl der Fälle vollkommen berechtigt. (Antwort auf Dr. Elof Förberg's Artikel.) Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 57-71.—**Stössel** (M.) Das Kurfuscheiwerbot. *Zahntech. Rundschau*, Berl., 1902, No. 504.—**Storey** (J. C.) Case of replantation. *Tr. Odont. Soc.*



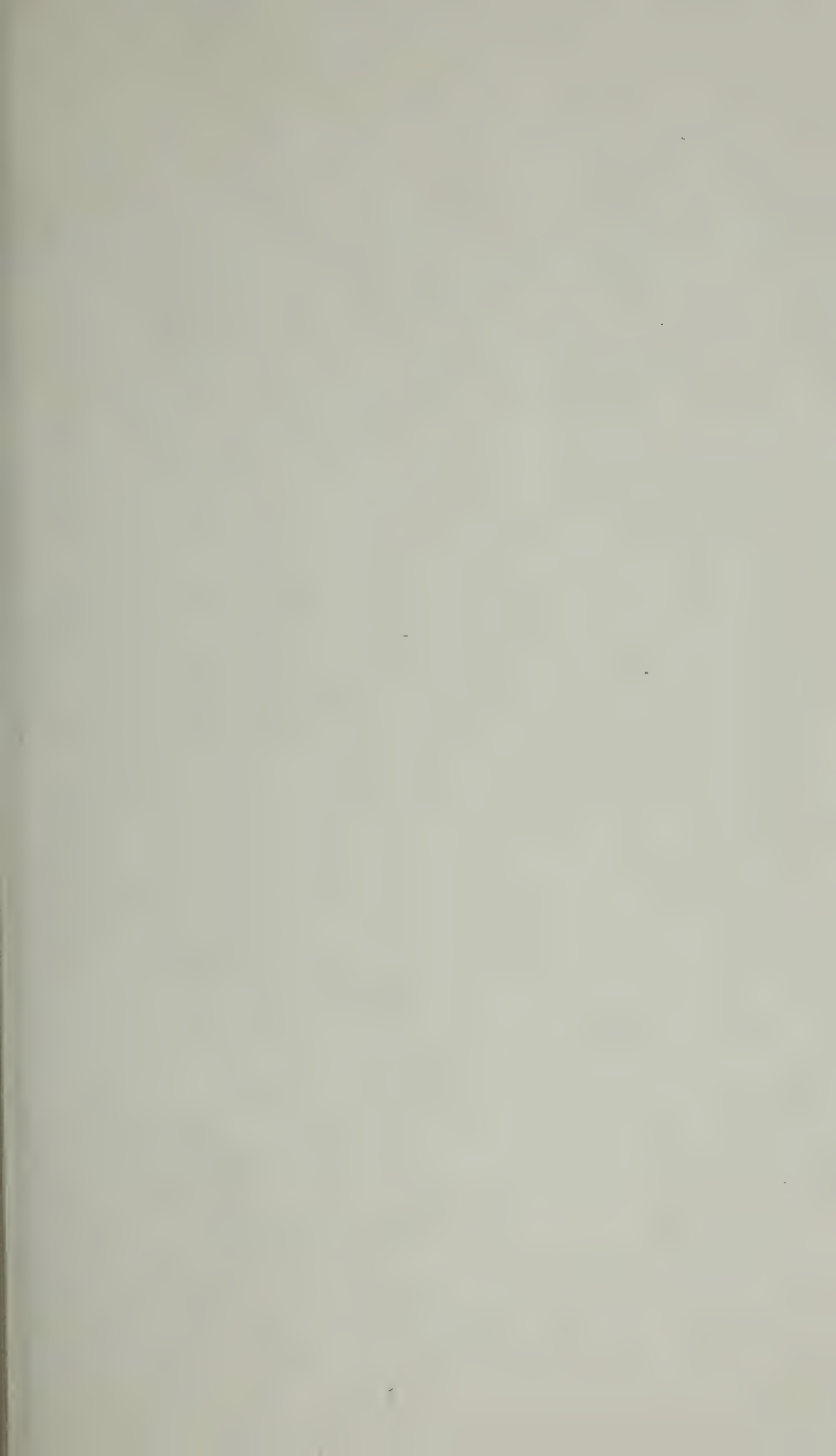
- Gt. Brit., Lond., 1900-1901, n. s., xxxiii, 204.—**Szabó** (J.) Histologische und klinische Untersuchungen über die Wirkungsweise des Argentum nitricum auf das erkrankte Dentin. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 42-57, 1 pl.—**Talbot** (E. S.) Stigmata of degeneracy in relation to irregularities of the teeth. Dental Rev., Chicago, 1902, xvi, 190-193.—**Tanturri** (D.) Adenoma puro della tonsilla. Arch. ital. di laringol., Napoli, 1902, xxii, 69-71.—**Thorne** (J. M.) Notching the soft palate for cure of post-nasal obstruction in adults. Brit. M. J., Lond., 1902, i, 962.—**Tilley** (H.) Some observations on thirty-five cases of chronic suppuration of the maxillary antrum. *Ibid.*: 945-948.—**Tomes** (C. S.) & **W. H. Dolamore.** Some observations on the motions of the mandible. Tr. Odont. Soc. Gt. Brit., Lond., 1900-1901, n. s., xxxiii, 167-202, 1 pl.—**Tonietti** (P.) Un nuovo metodo di diagnosi della sinusite mascellare. Arch. ital. di otol. [etc.], 1901-2, xii, 461-464.—**Toubert** (J.) Etude comparée de quelques variétés d'abcès d'origine dentaire. Parole. Rev. internat. de rhinol. [etc.], Par., 1902, n. s., iv, 158-163.—**Trebitsch** (H.) Zahnarzt und Zahntechniker. Aerztl. Centr.-Ztg., Wien, 1902, xiv, 159; 171.—**Treuenfels** (P.) Die Entzündung der interdentalen Zahnfleischpapille. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 154-159.—**Turner** (J. G.) Simple pedunculated fibrous epulis and supernumerary teeth. Tr. Odont. Soc. Gt. Brit., Lond., 1900-1901, n. s., xxxiii, 33-39.—**Uncommon** (An) dentistry case; [alleged unskillful extraction of a tooth]. Brit. M. J., Lond., 1902, i, 1002.—**Vann** (G. S.) Treatment of deciduous teeth. Dental Headlight, Nashville, 1902, xxiii, 63-66.—**Verdalle** (H.) Goutte aiguë du pharynx. Bull. et mém. Soc. méd. d. hôp. de Par., 1902, 3. s., xix, 340-342.—**Viau** (G.) Tropacocain. Zahnärztl. Rundschau, Berl., 1902, xi, No. 507.—**Villar.** Nouvelle observation d'extirpation du ganglion de Gasser.—Mém. et bull. Soc. de méd. et chir. de Bordeaux (1901), 1902, 290-300.—**Vladimiroff** (G. E.) Treatment of aphthæ and fetid stomatitis in children.] Med. Obozr., Mosk., 1901, lvi, 640-644.—**Vogl** (F.) Ueber Tropacocain. J. f. Zahnh., Berl., 1902, xvii, 59.—*Also:* Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 71-74.—**Wallace** (J. S.) Dental caries and the food of the South African native. Dental Rec., Lond., 1902, xxii, 206-209.—Observations on the colour and shape of teeth and a suggested operation. *Ibid.*: 145-150.—Twisted roots. Tr. Odont. Soc. Gt. Brit., Lond., 1900-1901, n. s., xxxiii, 20-26.—**Watson** (G. W.) Leptothrix racemosa in relation to dental caries. Dental Rec., Lond., 1902, xxii, 163-165.—**Watson** (S. A.) Case of harelip with cleft nose. Brit. M. J., Lond., 1902, i, 1083.—**Wedelstaedt** (E. K.) A few words about packing amalgam in cavities in the buccal surface. Dental Summary, Toledo, 1902, xxii, 251-253.—**Weiser.** Ueber Palatoschisis. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 94-97.—**Whitehead** (A. L.) The influence of nasal and nasopharyngeal obstruction upon the development of the teeth and palate. J. Brit. Dent. Ass., Lond., 1902, xxiii, 210-214.—*Ibid.*: Brit. M. J., Lond., 1902, i, 949-951.—**Winberg** (O. K.) Inoperable round-celled sarcoma of the upper jaw with metastases successfully treated with the mixed toxins of erysipelas and bacillus prodigiosus. Med. Rec., N. Y., 1902, lxi, 681-684.—**Winslow** (J. R.) [Sarcoma at the base of the tongue.] J. Eye, Ear, and Throat Dis., Balt., 1902, vii, 42.—**Witzel** (K.) Ueber eine neue Prothese mit Gleitgelenk nach Unterkieferresektion. Wien. Zahnärztl. Monatschr., 1902, iv, 130-146.—**Wolf** (G.) Nochmals der auswechselbare Gummisauger. Zahn- tech. Rundschau, Berl., 1902, Nos. 506; 507.—**Woods** (Alice M.) A case of progressive unilateral atrophy of the face and tongue. Woman's M. J., Toledo, 1902, xii, 54.—**Woods** (J. A.) A case of absorption [teeth]. J. Brit. Dent. Ass., Lond., 1902, xxiii, 193-197.—**Wright** (F. R.) Lesions of the mouth. Dental Rev., Chicago, 1902, xvi, 193-199.—**Zanardi** (U.) Sopra un caso raro di ranula congenita di grandi dimensioni. Gazz. med. ital., Torino, 1902, liii, 163.

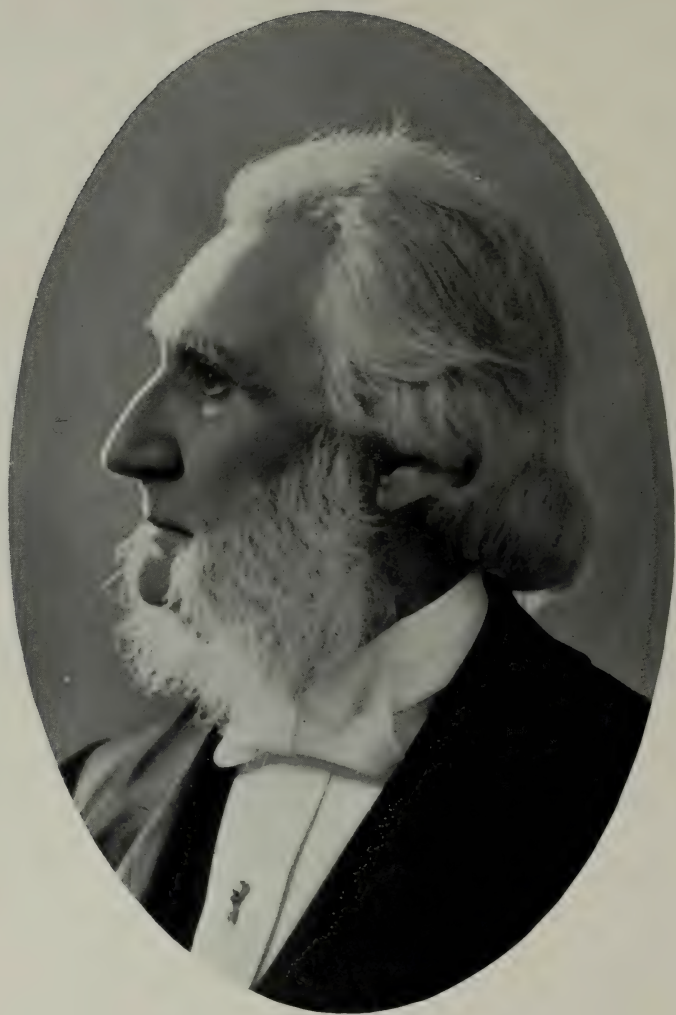
## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING MAY, 1902.

- May 6.—No. 699,171, to GUSTAV HOLTZ. Treadle motor.  
 " 13.—No. 699,653, to JOHN S. CAMPBELL. Dental vulcanizer.  
 " " —No. 699,776, to EMORY L. TOWNSEND. Dental impression-tray.  
 " " —No. 699,983, to BURWELL C. H. SIMPSON and CARL F. CRECELIOUS. Holder for tooth-brushes and tooth-powder.  
 " " —No. 700,160, to JOSEPH W. THATCHER. Dental mallet.  
 " " —No. 700,232, to JEAN PLANEUR and LOUIS DUTREMBLAY. Portable inhal- ing apparatus.  
 " 27.—No. 700,855, to WILLARD STREETMAN. Casting dental plates.





J. A. Wetherill,



# THE DENTAL COSMOS.

---

VOL. XLIV. PHILADELPHIA, AUGUST, 1902.

---

No. 8.

## ORIGINAL COMMUNICATIONS.

---

### RECENT PROGRESS AND PRESENT CONDITION OF DENTISTRY IN JAPAN.

BY DR. M. CHIWAKI, PRESIDENT OF THE TOKYO DENTAL COLLEGE.

**A**T the opening of a statement of the recent progress and present condition of dentistry in Japan it may not be out of place to devote a few words to the dental art as practiced by the Japanese in former times. In Japan, dentistry had its origin somewhere about two hundred years ago, and it was then known as *Kochiv-kwa* or stomatology. The professional duty of dentists at that time was limited to the extraction of diseased teeth, the supplying or alteration of artificial dentures, and treating the various diseases of the mouth by some primitive mode of operation. At the present day it is not an easy task, even for Japanese, to obtain full knowledge as to the medicines they then used, or the artistic skill exercised in the execution of their dental operations. This is due to the fact that they seldom had any written form of instruction and no text-books. After diligent search the writer found a few illustrations of their dental tools and something about their medicines, besides some information as to their curative methods.

As in every other country at any period, the extraction of carious teeth was in Japan the most common operation for the dentist. The easiest of these cases were usually executed with the thumb and index finger instead of with the dental forceps. In case these handy natural tools were ineffective, a pair of nippers was used. Sometimes an instrument such as is shown in Fig. 1, similar, except for size, to a sickle in its construction, was used to loosen a diseased tooth from the gum. This corresponded to our lancet. After the edge of the gum was cut loose from the tooth a certain quantity of mercury bichlorid was applied to free the root of the tooth from the

gum. Then their ever-ready tools,—the thumb and finger,—usually did the rest of the work.

Not seldom, a stick, as illustrated in Fig. 2, and a mallet, as shown in Fig. 3, were used to remove teeth. The stick was made of a hard wood, about six inches long, and with one of its ends finished much finer than the main body. The finer end was firmly applied against a tooth, and then the mallet, which was also made of a hard wood, about twelve inches long, was used to hammer the thicker end of the stick. These devices,—ingenious (?) as they thought,—were employed to remove, or rather knock out, diseased teeth, much to the annoyance and discomfort of the patient.

For pyorrhea alveolaris, opium (*Konronsan*, “mixed drug”) is said to have been used.

FIG. 1.

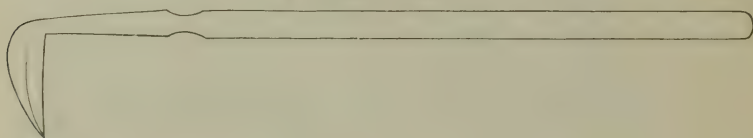


FIG. 2.

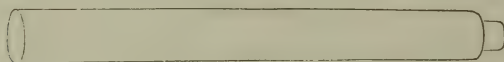
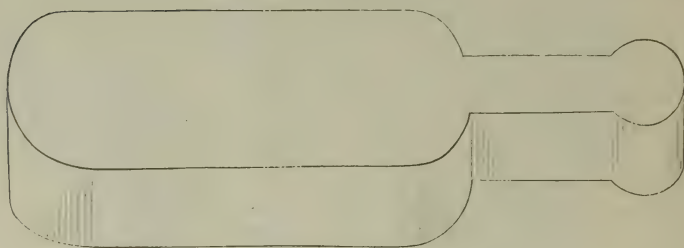


FIG. 3.



It is beyond possibility to ascertain exactly how far back all of these arts and methods were practiced, but, as I stated before, since the first part of the Tokugawa dynasty, say about two hundred years ago, dentistry was practiced here and there. These practitioners were either men of means or Samurai (“knight”) who had abandoned knighthood for the profession, and some of them had the honor of attending on the “Shogun,” the actual ruler of Japan at that time; consequently they were regarded with respect by the public. Afterward, however, men of a lower class who were quite ignorant of everything connected with the treatment of the teeth came to take up the profession of dentistry, and their clumsy and even dangerous manner of carrying out operations brought the profession into contempt, and it was no longer considered by the public as a profession fit to be practiced by a man

of any dignity. Owing to this, the investigation of all the matters connected with dentistry was totally neglected by our countrymen.

As a matter of course, the education given to the younger practitioners by these poor dentists was very simple, and anyone who desired to become a dentist had only to rely upon an established practitioner to learn his art by apprenticeship. The first step in the training of the apprentice was to teach him to extract deciduous teeth by pulling them out with the thumb and finger only. These dentists knew nothing of filling the cavities of carious teeth, but artificial dentures, made of ivory, metal or boxwood were familiar to them. These dentures were carved with knives or chisels so as to take the place of the natural teeth as nearly as possible.

Such was the condition until the flood of western civilization was poured in as the result of the advent of Commodore Perry, of the United States navy. This, of course, brought about many-sided changes in political, social, and educational institutions in Japan, and, as a consequence, the old system of dentistry could not remain unaffected. The presence in the country of an American dentist, Dr. Eastlake, who opened his office in the beginning of the Meiji era, was the first direct cause of the development of our dentistry in its true sense. From that time, as the years went by the number of students of the new system gradually increased; some of them began to practice, and were successful not only in winning the admiration of the general public by their thoroughness and skill, but also were welcomed by patients of the higher classes whose fathers and forefathers once looked down upon the dentists with contempt. Some of our countrymen began gradually to realize the necessity of taking better care of their teeth with the dentist's competent aid, and the old-fashioned practitioners were entirely abandoned by them, being considered very dangerous and not fit to be relied upon.

It was impracticable, however, at that time to strictly prohibit the latter class from practicing. But at last a measure was adopted by the government which had the effect of gradually consigning them to oblivion. This measure was the regulation concerning dental licenses which was promulgated in 1883. This regulation laid down that every dental practitioner must have passed the examinations for a license in dentistry, and the old-fashioned dentists were allowed only to extract diseased teeth and to make artificial dentures. Though this was not a fatal blow, yet the occupation of these poor practitioners was henceforth, like Othello's, "gone"!

The examinations, thus regulated, consisted of two parts, written and oral. The former comprised six subjects, namely, Anatomy, Pathology, Materia Medica, Physiology, Prosthetic and Operative Dentistry, and the latter was to test the candidates with regard to their practical knowledge as well as their acquaintance with the art of dentistry.

In those days, however, there was no book on dentistry in the Japanese language, neither was there any institution organized for the teaching of that important subject, so that young men who de-



sired to become dental surgeons could find no other means of acquiring the necessary knowledge than by becoming apprentices. None but those who lived at the time and went through the experience can form any idea of the difficulty of attaining a thorough acquaintance with this art without the aid of books and school, and of properly qualifying oneself as a dentist. As a consequence of the conditions mentioned, very few candidates were fortunate enough to get the privilege of practicing, and for the first six or seven years after the date of the first examination the licensed practitioners remained very few in number.

While the study and the practice of dentistry were in this poor condition, the progress made in all the other departments of medical science in Japan had already become very marked. Large numbers of well-qualified men were enrolled annually in the medical gazette published by the government, and educational institutions for medical students were established by the government in the chief towns of the empire. It is needless to remark that the contrast was striking. Unless a more effective plan for the advancement of dental education were laid down by the government, it must of course have been entirely hopeless to bring it up to the level of that of the mother science. Yet the government could not then take any active steps in the matter, being too much occupied with more direct and pressing affairs.

Thus at that time the need of an institution designed to promote the specific study of dental surgery was keenly felt. Suggestions looking to the formation of a dental school were heard from time to time, but no definite step was taken. This task was reserved for Dr. Takayama, Japan's most renowned dentist. Dr. Kisai Takayama was born at Okayama, in 1849. In his youth he was educated at the Okayama Gakko, and afterward in the Fukuzawa school at Tokyo. In 1872 he went to San Francisco, and first attended Miss I. Prince's Home Institute, where he was educated. At that time some circumstances brought him into occasional contact with dentists, and seeing that the progress made in dentistry by the Americans was far greater than that achieved by any other nation, he determined to enter upon the study of that science, although in Japan dentistry was then one of the lowest professions. Thus he became a student in the dental office of Dr. Van Denburg, of San Francisco. After studying hard for five years he attained a thorough knowledge of dentistry and was qualified as a licensed practitioner in that district.

In 1878 he returned to Japan with the ambition of elevating the standard of the dental profession in our country. On his return he opened a dental office in Tokyo, but, at the outset, his social standing was a very puzzling matter to his neighbors, for a majority of his fellow dentists belonged to the lowest strata of society and were so ignorant and contemptible that he could not have any social relation with them. It was not to be expected therefore that he could realize his ambition within a few years. The first step he took toward executing his plan was to make his countrymen think more of the profession to which he belonged,

and with that object in view he came into contact as much as possible with the aristocratic elements of society. With this idea ever in his mind he labored untiringly and conscientiously, with the result that he gradually attracted to him the men of the upper classes and won their confidence by his skillful operations and attractive personality. Thus his reputation reached the highest pitch, and he came to be recognized throughout the Land of the Rising Sun as a first-class practitioner. In 1888 he was appointed by the Imperial Household Department to be the Surgeon-Dentist to H. I. M. the Emperor, and soon after he was dignified with the order of "Jurokui." This appointment was a great triumph to him and a stepping-stone to the carrying out of his plan for the amelioration of the social position occupied by our dentists. In 1883, when the regulation concerning dental licenses was promulgated, the government appointed him a member of the Board of Examiners for that license,—a post which he occupied from that time until his resignation in 1889.

Having raised himself socially in this manner, he entered on the next stage of his career by establishing a dental school to facilitate the education of students anxious to study dentistry. In January, 1890, he established the Takayama Dental College, at his own expense, in Tokyo. It was the first school of dentistry ever established in our country, and the predecessor of the Tokyo Dental College. At the first session of the college the faculty was composed of seven instructors, the majority of whom were former apprentices of Dr. Takayama and who were all reputable practicing dentists at that time. The chair of president was occupied by the founder himself. Only nine students were enrolled at the opening of the college, but the number was increased to forty-five in July of the same year. From the inauguration of the college the financial difficulties were very considerable, the expenditure always exceeding the income, and a large amount of money was contributed by the president from his own purse to make good its deficits. The courses of instruction were very primitive, owing to the paucity of the funds, and all the students were instructed in one classroom. The schedule consisted of the following subjects: Physics, Chemistry, Anatomy, Pathology, Physiology, Materia Medica, Operative and Prosthetic Dentistry; and clinical lectures were given twice a week. There being no text-books, it was a matter of pressing importance to provide them so as to facilitate the investigations of the dental students. After incessant labor during four years, from 1891 to 1895, the following text-books were accordingly written by the faculty in the Japanese language and published year after year: Dental Metallurgy, Operative Dentistry, Dental Surgery, Prosthetic Dentistry, Materia Medica, Anatomy of the Fifth Nerve. Besides these works, copies of the lectures in the classroom were published monthly in the form of a magazine for the convenience of outside students who could not attend the college regularly.

The result of the distribution of the books and the magazine was so conspicuous that it caused the profession of dental surgery

to be recognized by our countrymen as a healing art very closely connected with medicine, and led to the dental practitioner being socially regarded with ever-increasing respect. And we may add that in no profession have the conditions of success been so difficult as were those of dentistry in those days.

In January, 1900, Dr. Takayama was obliged to place the college under my control, I then being one of the faculty. This was done because Dr. Takayama was too busy with his practice to look after the business of the institution. Since I took the sole responsibility I removed the college to the present building at Misakicho, Kanda, Tokyo, which was purchased at my own expense. After the removal of the college to the present location, its name was changed to that of the Tokyo Dental College, and improvements were made in the schedule and in the system of instruction so as to bring them up to the level of modern requirements and of the present standing of dentistry in Japan. Thus, the courses of instruction were extended over three collegiate years and some able professors were added to the college staff. Owing to these innovations, the prosperity of the college was considerably increased, and the institution is now steadily carrying out further improvements, the object of which is to secure the more thorough scientific training of the students. In addition to the present facilities, the recent advancement of dental science in America, necessitating the publication of new text-books in lieu of those hitherto used, the college is making preparations to provide more complete and up-to-date works; and the following books will be published during this and the next session: Dental Anatomy and Histology, Orthodontia, Operative Dentistry, Prosthetic Dentistry, Materia Medica, Dental Pathology, Crown- and Bridge-work.

Since its establishment, the Tokyo Dental College, together with its predecessor the mother college, has sent out fifty-eight graduates, and two hundred and fifty-four students have passed the license examinations of the State Board. These qualified dentists constitute nearly one-half of all the practitioners who have thus far qualified in Japan.

Since the organization of this institution some dental schools have been established in Tokyo, but none of them has continued in existence longer than a few months, and there is as yet no dental course or department provided in the medical colleges of the Imperial Universities of Tokyo and Kyoto.

The Tokyo Dental College may thus claim the distinction of being the only institution for the teaching of dentistry in all Japan, and it certainly deserves commendation for the services it has thus far rendered toward raising the standard of dental education in the country.

Thus far I have given only a short sketch of the past of dentistry in Japan. Undoubtedly every reader will recognize the fairly rapid progress it has made during the past twelve years. But no one could possibly disagree with the writer in saying that it is still in the most immature state of development. There are altogether 576 dentists in the empire, some of whom were barely licensed in virtue



of doubtful knowledge acquired as apprentices. Granting that all of them are capable of attending to the teeth of the nation, we must remember that Japan has forty-five million inhabitants. This means only one dentist for every 78,125 persons. No wonder that so many Japanese suffer from caries, and consequently from dyspepsia! In 1898, in the United States there were fifty-six dental schools, with 1513 instructors, turning out 1921 graduates annually; whereas in Japan, in 1901, there was only one dental school, with eighteen instructors. Now, we sincerely believe that one dentist for at least every 10,000 inhabitants is absolutely essential. This means that we must train 4000 for the profession in addition to the present number. But, as the present capacity of the dental college is barely sufficient to turn out forty graduates annually, one hundred years must elapse, on this showing, before the empire shall have the necessary number of dentists!

It need not be said that the present slow rate of increase is far from what we can be satisfied to tolerate. Reviewing all the conditions, we do most conscientiously realize that the mission of the Tokyo Dental College, as well as the obligation of its faculty, is very great; and we are sincerely hoping that the time may speedily come when this pioneer institution may be able to turn out at least one hundred and fifty graduates annually, so that they may better meet the demand of the field before us, which is already white.

---

## INLAYS—PORCELAIN AND GOLD.

BY H. B. TILESTON, M.D., D.D.S., LOUISVILLE, KY.

(Read before the Alabama State Dental Association, Tuscaloosa, Ala., May 15, 1902.)

THE art of filling carious cavities in human teeth with porcelain by the method called "inlaying" has, within the comparatively short time it has been in vogue, grown to such vast proportions, and presents so many phases in practice as brought out by the numerous advocates of this material, that to treat the subject fully is quite beyond the scope of a single paper without extending it to an inordinate length. Moreover, so many excellent articles on porcelain have already appeared in print that it would be a work of supererogation for me to go into details concerning the construction of this class of inlays. So I will only take up the consideration of a few points in porcelain work which, from my own experience and that of others, deserve at least a passing mention, and will then give a detailed description of a method of making gold inlays which is unique and is quite definite and satisfactory as to results.

The question of high- or low-fusing bodies was for a long time a mooted one, but the decision is now practically unanimous in favor of the former. I tried the low-fusing bodies faithfully for several years with results so unsatisfactory that I finally abandoned porcelain inlay work altogether for a time. The chief objections were the extreme friability of the material and the fact that colors

which matched the tooth nicely at first would fade out and soon become unsightly. There was also a decided tendency in the material to become porous in the baking, with the result that the surface of the inlay would after a time be covered with minute black specks. Even the high-fusing bodies are not entirely free from these faults, but the later product of the manufacturers, together with improved methods and appliances, particularly the electric furnace, make it possible, with great care and skill, to obtain results eminently satisfactory.

The use of high-fusing bodies necessitates, of course, the employment of platinum in forming the matrix. Platinum is not so difficult to manipulate if a perfectly pure article can be obtained, not thicker than one one-thousandth of an inch, and it be annealed properly. It is objected that in cavities having complicated curves the difficulties in the way of getting a perfect matrix with platinum are insurmountable. The remedy for such difficulty is obviously to eliminate complicated curves and reduce to simple ones by heroically cutting away tooth-tissue, thus changing an unfavorable case to a favorable one. A perfectly successful inlay, such as we always intend to make, will be one which, under ordinary conditions of observation, will be practically invisible; hence a little sacrifice, more or less, of tooth-substance is not a matter of much importance.

I have experimented with the method of taking an impression of the cavity, using cement for the purpose, and from this striking up a matrix using the impression as a die; or, casting cement or fusible metal over the impression and burnishing the platinum into the replica of the cavity thus obtained instead of into the cavity itself; but, like the majority of operators in this line of work, I have returned to the former method of burnishing the matrix directly into the cavity in the tooth. The only value attaching to the impression method is to be able to make an approximately perfect matrix which is to be corrected afterward in the cavity itself; but the advantage thus gained is, in most instances, not worth the additional time required. A modification of the impression method may be profitably employed by taking an impression of the cavity with the matrix in it as follows: After the platinum has been perfectly burnished into the cavity and accurately over the margins, a bit of modeling compound is warmed and pressed into the matrix and out over the margins, forcing the platinum tightly into contact with the cavity walls and margins, where it is held by the finger until cold, when matrix and impression may be removed together, thus avoiding all danger of distortion. It is then invested with a material calculated to withstand the heat of the furnace, after turning up several corners of the platinum that they may become engaged with the investment. After warming and removing the modeling compound we have not only the platinum-lined cavity exactly as it was in the tooth, but a part of the surrounding surfaces of the tooth as well which affords a definite guide in restoring contours. An invested matrix can be handled without danger of being bent, and is not likely to be warped in baking.

It is excellent practice to bake some high-fusing foundation body in the bottom of the matrix, return to the tooth and correct the margins, then take an impression as described, and invest. This adds another element of certainty in getting a perfect-fitting inlay.

In building out contours it is best to add an excess of body and then carve accurately to the desired form, providing a slight excess for shrinkage, rather than to bake on an excess of material with the expectation of grinding down after the inlay is set, as this endangers the friable margins, which are very liable to be chipped and thus ruin what might at first have been a perfect fit. Dr. Capon says it is best to have the porcelain edge slightly below the enamel margin rather than above it, and then to polish the enamel down flush instead of the porcelain.

The injunction so constantly insisted upon, to have the enamel margins square and not beveled, cannot be disregarded with impunity if success is to be hoped for. Attenuated edges of porcelain will not stand anywhere, especially when exposed to stress.

It has been frequently stated that the simplest and easiest cases in which to obtain both accuracy of fit and perfection of shade are those which occur upon labial surfaces. My own experience does not accord with this statement. I have found that in both particulars satisfactory results are more readily obtained in approximal cavities and in incisal corner restorations, than upon labial surfaces. With surrounding walls cut square and perpendicular, as they should be, an inlay made for a labial cavity will fail to fit by just the thickness of the platinum used for the matrix; and a color which is entirely satisfactory when the inlay is tried in, because the basal color of the tooth is seen through the translucent porcelain, may be found to be wholly unsatisfactory when underlaid by the opaque cement used in setting. In cases of approximal cavities and restoration of incisal corners or tips, when the matrix has been stripped off, the inlay sets back snugly against the enamel margin and the joint is eliminated entirely. The shade in such cases, once accurately obtained, looks the same after it has been set as it did before. The color in approximal cases should always be a shade or two lighter than the natural shade of the tooth.

Just how to proceed to obtain a color or colors in an inlay which exactly match the case in hand has been the subject of considerable discussion of late. Some claim that the best results are secured by mixing or blending the shades and then baking them together, while others, notably Dr. Reeves, of Chicago, maintain that it is best to lay on the colors separately and by repeated firings get the desired blend through the translucency of the material, the deeper basal shades being modified by being seen through the overlying ones. While this latter method of procedure would no doubt produce very happy results when skillfully done, the nice discrimination necessary to its successful employment is quite beyond the capabilities of most operators in this field. The shade problem is an exceedingly vexing one, especially to the beginner, and its only solution really lies in long practice and experience. Not only must



the colors be skillfully selected to suit any particular case, but great care is requisite in the firing, that the delicate shades may be fully developed by just the right amount of heat and time given in the firing, on the one hand, and that the heat be not so excessive as to burn out the colors, on the other. Some of the shades in porcelain bodies, notably the yellows, burn out very readily. Hence it is important for the operator to familiarize himself with the material he is using and how it is affected by the apparatus he may be employing for baking, by experimenting before undertaking a practical case.

In the early days of porcelain work there was much uneasiness expressed as to the durability of the cement attachment of the inlay to the cavity walls, it being stated frequently that the method of setting inlays with oxyphosphate of zinc cement constituted the chief element of weakness in the process. Experience proves such fears to have been groundless. Not only does the cement hold the porcelain fixedly in place, but there seems to be very little tendency for the material to wash or dissolve out from the joints. Even the joint at the gum margin, where cement fillings are most prone to fail, appears to be as secure as at any other point. All this, of course, where the fitting of the inlay is accurate and where favorable conditions as to dryness have been maintained.

Where there is sufficient material to admit of it, the inlay should be grooved and the cavity slightly undercut to afford greater security of attachment for the cement, but upon surfaces not exposed to stress such provision is hardly necessary, especially if a sticky or adhesive cement be used. In incisal corner restorations much more definite anchorage must be provided. The best method in such cases, from my experience, is that suggested and demonstrated by Dr. Capon, of baking a platinum wire into the inlay, to be anchored by a gold filling upon the lingual or incisal surface of the tooth.

Porcelain inlay work has many features about it which are admirable. In its perfection it is ideal as a method of restoring decayed teeth in the front part of the mouth, and it is fascinating to the earnest operator, but it is frequently disappointing. There are so many little points in the *modus operandi* where failure, partial or complete, may creep in, that it is seldom that even an experienced operator completes a case which is absolutely perfect. The nature of the material, in that it is not susceptible of the slightest alteration or correction after it is once complete, demands the most positive accuracy of method and manipulation, and the greatest care and skill throughout, and such operations should command a fee commensurate with the pains required on the part of the operator to produce them.

While it is true that there are many possibilities of failure and many disappointments, yet one single case that one can view as perfect, compensates, in the joy that it brings, for all the disappointments that have gone before.

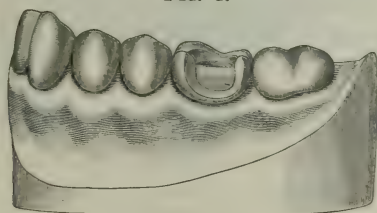
Carried away by their enthusiasm, some operators in porcelain have made use of it in cases where something else would do better.

Small and medium-sized cavities in bicusps and molars on occlusal or approximal surfaces can be more quickly filled with gold and saved more certainly than with porcelain, because the demands in the manipulation of the latter material cannot always be complied with in these localities, and because porcelain will not bear the force of mastication which normally falls upon these teeth.

In cases of larger cavities, those which if restored to contour with gold would require long and tedious operations, trying to both patient and operator, or which would perhaps more frequently be restored with amalgam, or in which in many cases crowning would be resorted to, the gold inlay which I am about to describe is peculiarly, and I might even say beautifully, adaptable.

In preparing a cavity in molar or bicuspid to receive a gold inlay, all overhanging walls must be cut boldly away, and all undercuts eliminated with chisels where possible, or filled in with cement where it seems best not to further cut away a wall; the object being to so shape the cavity that an approximately perfect impres-

FIG. 1.



Showing preparation of cavity in second molar.

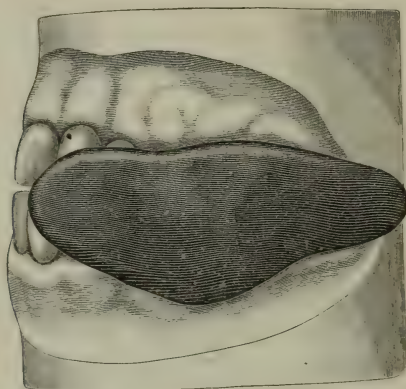
sion of it may be taken. (Fig. 1.) Where large approximal or buccal contours are to be made, anchorage must be provided in a step upon the occlusal surface. In some cases the inlay may extend from a mesial to a distal cavity over the occlusal surface. These latter are the most difficult of all cases, but can be successfully accomplished by this method. All margins should be smooth, and they may be made either square or beveled. In most instances they had better be beveled, especially where a weak enamel wall needs to be supported by the overlapping of the gold edge of the inlay.

The case is now ready for the impression, which, with the bite, is taken as follows: Warm a small piece of modeling compound over your Bunsen burner or lamp at the chair; pinch up a bit of it upon one side in the form of a teat to enter the cavity in advance of the mass so as to certainly fill it all; place in position over the teeth, without drying them at all, pressing down or up as the case may be, enough to start it right, and instruct the patient to close the jaws tightly. Now with the finger press the compound over the buccal surfaces and into the embrasures, requesting the patient to do the same on the inside with the tongue, and, with the jaws still tightly held together, drop the saliva ejector into the pocket of the cheek and chill the compound thoroughly with a jet of cold water. (Fig. 2.) It is then carefully removed, the cavity in the tooth filled with temporary stopping, and the patient dismissed.

That part of the impression representing the cavity and the entire tooth involved, is now packed with copper amalgam (Fig. 3), the balance filled with plaster and mounted on a small crown articulator.

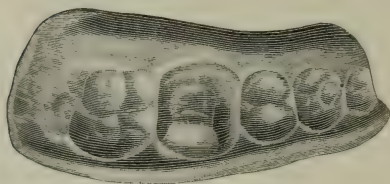
In packing in the amalgam a small button should be built up upon the base of the tooth to engage with the plaster of the model so that the metal tooth shall be held strongly in position in the

FIG. 2.



Modeling compound impression and bite in position.

FIG. 3.



Modeling compound removed, showing cavity in tooth to be filled with amalgam.

FIG. 4.



Partial model, showing tooth and cavity of amalgam.

model. The compound being removed, we now have a perfect model of a section of the jaws in occlusion, with the tooth and its cavity made in copper amalgam, upon which we may prepare our gold inlay almost to the point of completion. (Fig. 4.) In some instances the model of the cavity may be slightly imperfect, but gold, unlike porcelain, is tractable and can be modified and



corrected in the cavity itself, which is provided for farther along in the process.

Pure gold plate about 36 or 38 gauge is employed in making an inlay shell, which is afterward thickened and strengthened by being partly filled with 20-karat gold or 20-karat solder.

Pure gold plate, as thin as 36 gauge or thinner, works very soft and can readily be adapted to all parts of the copper replica of the cavity with burnishers assisted at first by a pledget of wet cotton to avoid puncturing the gold while carrying it into the deeper parts. The gold should be so trimmed as to leave it overlapping the margins everywhere. If the impression was a good one and was carefully packed with the amalgam, a distinct line will be seen on the model indicating the gingival margin of the cavity, and this must be carefully brought out in the gold matrix and a little overlap of gold provided along this margin as well as the others. A good-sized hole is now punched in the gold at that part which covers the axial floor of the cavity, a hole one-sixteenth to one-eighth inch in diameter. (Fig. 5.)

FIG. 5.

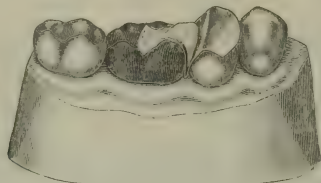


Gold matrix, showing hole punched in back.

The next step, the arrangement of the outer piece of gold and the formation of the contour, appears at first sight to be quite difficult, but in most cases it is very simple. In approximal or buccal cavities with an occlusal step, where the restoration required is not excessive, the result aimed at is accomplished readily in the following manner: A piece of the same thickness of pure gold is cut large enough to extend well out into the embrasures, buccal and lingual, and to reach over upon the occlusal as far as will be needed. This is trimmed along one edge to fit within the line on the matrix piece which marks the gingival margin, but is not allowed to lap over upon the excess left along that margin. The two pieces are now held together with a pair of long, slender solder tweezers and tacked with a tiny piece of 22-karat gold. The pieces thus assembled are dropped back into the copper cavity, when the outer piece will extend straight out into the embrasures and stand up above the occlusal surface of the tooth. Wet cotton is now packed between the two pieces and the gold forced out into the desired contact with the approximating tooth (Fig. 6), when the gold is bent over the cotton and down upon the occlusal surface, and the articulator closed together tightly, forcing the thin gold into proper articulating form. Holding the articulator firmly closed, the gold is bent down along the buccal and lingual margins into contact with the matrix piece with a flat burnisher, the cotton being tucked in where it is in the way. At the bucco- and linguo-occlusal

angles the outer piece may have to be cut a little to properly shape those corners. The outer piece is now trimmed all around so that its margin falls within the excess provided in the matrix piece, and should lie as nearly as possible along the true margin of the cavity. This arrangement makes the placing of the solder easier and provides an overlap of thin pure gold for final burnishing and finish after the inlay is set.

FIG. 6.



Gold matrix and contour piece assembled in place in an approximal cavity, with cotton packed between them to produce the desired contour.

The cotton is now removed either by turning up the occlusal piece or by pulling it out through the hole in the back, and nothing more is done until the patient again appears for the second sitting, when it is tried in the tooth and corrected and perfected both as to its accuracy of fit and its occlusion. In most cases it is surprising how nearly perfect both have been made on the model, but it is well always to provide for this final adjusting, when the inlay may be finished and set at the same sitting.

FIG. 7.



Complete gold inlay.

When all desired corrections have been made the edges are soldered together with 22-karat gold and the interior filled almost but not quite full with 20-karat solder by dropping small pieces through the hole in the back and fusing them by holding in the flame of a Bunsen burner or spirit lamp. A cavity should be left just within and about the hole for the cement to enter and help hold the inlay tightly to place in the cavity. The inlay should be set under conditions of perfect dryness, the rubber dam being used wherever possible, and after cement has thoroughly set should be finished like a gold filling. The rougher finishing and the thinning of the edges should be done with the ordinary gold files before setting, and while the cement is still soft the thin edges should be carefully burnished over the enamel margins all around the cavity, thus leaving practically no cement at all exposed to washing. (Fig. 7.)

In cases demanding excessive restoration of contour, where the method with cotton is not applicable, the desired contour may

be built out and carved with wax or plaster from which a die and counter-die are made and the outer piece struck up. Or a quicker way and one giving about as good results, is to carve up the contour in plaster poured into the matrix piece, press this into warmed sealing-wax, and then burnish a piece of gold into the intaglio die thus obtained and correct on the model with burnishers and pliers.

I am frequently asked why I use copper amalgam in making the tooth-model. My answer is that any good amalgam will do, or even cement might be used, but for several reasons the copper amalgam serves the purpose best. It sets quickly, neither expands nor contracts, has good edge strength, its initial cost is small, and it can be used over and over again. Where thin enamel walls are to be represented the cement would not be strong enough to withstand the force necessary in adapting the gold to the cavity.

The greater the amount of restoration demanded in a given case up to the point of necessary crowning, the better is this method adapted to its needs, and frequently teeth that would ordinarily be crowned, can be much more comfortably and hygienically treated by this means. And moreover I firmly believe, and the belief is founded upon observation, that a well-fitted inlay cemented in will save the tooth for a longer time than would a filling which would be pronounced to be a good one, in the same place.

I recently gave a clinical demonstration of this method in Chicago which was witnessed by Dr. W. V-B. Ames, who has had an experience of many years in gold inlay work,—by a method different from this, however,—and he stated that his observation was that his inlays were standing better than his gold fillings.

In the practice of this method of making gold inlays I have undertaken a great variety of cases upon buccal and approximal surfaces, in localities in the mouth difficult as well as easy of access, and some involving both mesial and distal surfaces of molars and bicuspid; and I confidently offer it as a practical, esthetic and successful means of restoration and conservation in all such cases.

---

## THE ORIGIN OF IDEAS AND INVENTIONS, WITH COMMENTS ON METHODS.

BY A. G. BENNETT, D.D.S., MINNEAPOLIS, MINN.

IT has been well said that a book is the most individual of all products; and I presume it may be justly claimed that if any well-defined right takes precedence of another, the right to one's own ideas or inventions must stand at the head of the list. But in saying this we must be mindful of the two facts,—that many inventions are a growth, and that some inventions as well as discoveries have more than one claimant appearing simultaneously. Some inventions are the final fruitage of the slow accretion of years, and even of centuries. The same cannot be



said of methods generally, since these are often the result of personal tendencies and aptitudes, or the mere accident of training under certain conditions or teachers.

I have been impelled to make a few remarks on this well-worn theme by observing in our literature during the last few years certain tendencies that one encounters all too frequently,—mainly the tendency to claim too much for the newness of an idea or a method. A man who has been a close student of dental literature for almost thirty years, and has given no little attention to the history of ideas, inventions, and methods, is perhaps entitled to assume a slightly critical attitude toward some recent claims.

The immediate occasion of my saying this was the reading of a recent article by Dr. G. S. Allen, of New York city. I am pleased to find confirmed there what I have long known, and yet hardly dared to publish or even mention,—that Dr. Black is not the author of the very familiar and widely quoted, and strongly indorsed and sometimes severely condemned summary, "extension for prevention." The same idea, but less clearly emphasized, has long been familiar as the underlying principle of the "contour" method, as I shall show later. But Dr. Black is certainly entitled to and deserves full credit for organizing the principles implied in this up-to-date creed. And I might remark in passing, and with the utmost emphasis, that this easily accepted formula by no means covers the entire field of tooth-preservation by the art of filling; nor are its obvious implications equally or entirely the embodiment of permanent principles. In other words, it is more of the nature of popular generalization than the product of a discriminating and scientific mind.

In all the discussions of the problem of extension for prevention there is one idea that is more conspicuous by its absence than by its presence, namely, the *origin* of extension. During the 70's and the early 80's the favorite theme for discussion was "contour *versus* separation," with a decided preponderance of theory and practice in favor of the former. As a matter of fact, separation, as recommended by Dr. Arthur, very quickly became obsolete among progressive men. Now, contour demanded first and foremost a very definite extension of the cavity in all directions, and where practicable, especially under the gum. After carefully reading this discussion as carried on in the dental journals of that period (1872 to 1882), I condensed the essence of both sides in the following summary:

"On these [approximal] surfaces we have defective enamel, which is most exposed to the action of acids and least benefited by wear of mastication. Because contact permits retention of food and stagnation of oral fluids, and favors decay, the approximal surfaces are separated; and because contact favors decay and the natural shape of the tooth is best, the teeth are first separated and then their original outlines restored by filling. *Contour is separation made permanent.*

"Both systems have in some respects been found wanting. Separation cuts away *surface*, which contour restores. Separation

favors *change of position*, which contour prevents. Separation exposes the gum to pressure, inflammation, and detachment, while contour gives it entire protection. But contour favors stagnation of the oral fluids, a condition which greatly favors decay; separation permits their circulation, a condition which is antagonistic to decay. Contour derives one of its strongest points from separation, while one of the worst evils of separation,—change of position,—is prevented by contour. Separation removes defective enamel and often exposes the dentin, which may or may not be protected by filling; contour, after removing defective enamel and dentin, replaces these tissues *by a metallic approximal surface*.

Now, after carefully examining the work of such adepts in the art of contouring as Drs. Webb and Brown, not to mention others, during the decade from 1880 to 1890, I fail to find, after making comparisons with some present-day efforts, anything essentially new as regards the two fundamental points, namely, the removal of the defective surface up to or beyond what may be called the danger line, which implies the second point,—the ability to reach and cleanse the tooth on all surfaces *up to the margin of the filling*. As to the steps, and the square base, and incidental means of anchorage, I do not feel qualified to speak; but judging from a number of cases that I have examined recently, I feel safe in saying that the deficient resistance to strain as shown by fractured walls, and even by the splitting of the tooth, danger to the pulp by the large mass of material, and even redecay where one would hardly expect to find it;—in view of these facts and factors, I feel safe in saying that the additions to the ideas of extension, as previously advocated, do not seem very greatly superior to the former method. I am very well aware that judging any method, especially a new one, largely by its failures is more than unjust; and I am more inclined to avoid this attitude of mind because it is the indiscriminating, popular method, and at the same time too much the rank-and-file method of our profession.

After examining the work of these men that I have mentioned,—and I had unequalled opportunities in the case of the latter, extending over a period of almost three years,—I will say that I found by far the greatest number of the cases as sound and solid after ten, fifteen, and even twenty years as when the work was done. It is true I found defects and failures, but these were a very slight minority as compared to the successes.

Now, I should expect from present claims to find after a lapse of the same periods of time, the work of the ablest exponents of the present methods to show a still higher percentage of satisfactory operations. Let time tell the tale! I am inclined to think that some features of the extension method, as for example the measurement of cavities, will receive a vanishing degree of attention as experience widens. Vitality and endurance may increase, but they are not likely to cheapen—rather they will become more valuable; and time spent in measurements will by and by find better investments.

I am rather inclined to think that the prevention of extension,

or at least the extension of prevention, will mean less gold and ultimately become the "golden mean." It is hardly fair with our present experience to call this popular formula an extreme, but at the same time, if but the smallest points are to be added here and there, it must argue against limitation fences that would exclude other and equally sound methods.

I have been lately impelled by some personal experiences to emphasize the importance of giving "credit to whom credit is due," as made possible by a wider and more accurate knowledge of the history of ideas. Not long ago a professional brother of marked ability and the best intentions, after expatiating at considerable length on the various phases and features of a crown he had invented, being informed after the meeting that I had written up the same thing more than ten years ago, was almost "broke up" because I did not "call him down." It is clear enough that his not knowing of my article gave him a chance to invent something on his own account, but certainly excluded the possibility of a patent. The moral need not be drawn.

Recently a dentist from a neighboring city, claiming a patent on a new method of bridge-work, came here and gave clinics at which he taught the "art" and revealed the "mysteries" of his alleged new and patented system. Now this same method, in all its essentials, if not in every little detail, is the one I published in 1887,—antedating his claim by five years,—and which was well known to most of the students in the Pennsylvania College of Dental Surgery of that and the previous year.

It is not a new experience with certain of our brethren in an Eastern city to be confronted with a "stand-and-deliver" demand for royalty on their own ideas. I cannot say I encountered exactly such a demand; but it is clear that just the same conditions exist for such a state of affairs. I might say further that I have used the method ever since publishing it,—a fact that is well known by most of the dentists in this city. I might also add that I have encountered claims of priority for the cement-and-gold combinations from men both here and in the East who are not entitled to the claim. I have had a letter from Philadelphia in which credit is given to Drs. W. D. Miller and J. Edward Line, as having first published the idea about the year 1894. Now, at least four years before that time I found the idea in the most explicit terms in an article written by Dr. Ottolengui, in which article he detailed the various ideas and methods he had learned at the New York clinics. The idea was even then not new to me, since I had been using it about one year previously, having gotten the suggestion from an article explaining the method of combining gold with copper amalgam. In an article I published about two years ago, I gave credit for this idea to Dr. Clapp, of Boston, who in a letter to me, while not disowning the copper-amalgam-and-gold method, makes its priority rather doubtful.

I might say further that my first attempts at combining gold and cement were made while I was a demonstrator at college, about the year 1884. My method at this time and for about five



years was to allow the cement to set, and then after securing anchorage at one end and starting the gold, I extended the undercut along the sides, including the other end, after which I continued and completed the filling. It is almost needless to say that building the gold into fresh, sticky cement placed in a perfectly dried cavity with very slight undercuts is a great advance over my original method.

As we are right in the midst of various extensions,—of sight, of ideas, of operations, of discriminating methods, not to mention college courses and curricula,—it may be timely to remark that the day of the partisan with his partial culture is passing. Time was when certain partisans were so convinced of the necessity of an immediate and universal adoption of their ideas, and enthusiasm so outran judgment, that their very endeavors went far to discredit and defeat their purpose. The personal equation has been mentioned several times in our literature, but its egotistic application has been less frequent. Those who have ultimately found themselves on the right side of recent controversies are perhaps entitled at least to call attention to the result of discussions during the last thirty-five years,—the greatest period of progress in the history of our profession. There were times when the idea was forced into one's consciousness that these partisans were fearful lest certain so-called principles or favorite methods should somehow escape or perish with their authors, and consequently the dental profession would suffer a heavy loss. But even then, during the heat of these discussions the idea of what may be termed "scientific sectionalism" was not brought to the front or even mentioned. Now, occasionally, one hears allusions to Eastern and Western ideas; and some are even reproached with having an Eastern mind, though what the distinctive traits of such a mind are has not been specified.

It is true that during the "contour-separation" discussions some were inclined to reflect upon the ability of their opponents by the use of such expressions, perhaps too often repeated, as, "If the operator have the skill," etc., or "is informed as to causes and conditions of success and failure," he would adopt the methods that had been demonstrated to be the best. And one is pained to see something of the same spirit appearing in present-day discussions, as is shown by a sweeping classification of dentists into those whose who "build cavities as we do," and those who merely "fill holes." To apply such a term as the latter to the finely shaped and durable operations of thousands at the present day and hundreds at least in the past is almost equivalent to discrediting the discussion by offensive expressions, not to mention the exceeding aptness of the term "building" when applied to an excavation.

Apropos of the partisan pleaders I may repeat what I said at the close of the "new departure" controversy: "It may be safely asserted that facts and truths which all progressive practitioners are seeking require no such impassioned appeals or such a liberal use of italics and capitals to secure their recognition. In respect to

the immediate influence and permanent value of this movement [the 'new departure'], it may be observed that many who imagined that they had found a specific for failures and disappointments soon came to the conclusion that the operator must be guided (to quote Dr. Bogue's compact summary) 'by a judgment based, not on the questionable work of one, but on the carefully collated knowledge of many.'"

Of course it is neither asserted nor implied that the so-called "new departure" has any direct relation, except as to mental attitudes, to the present discussion. Extension for prevention is rather a lineal descendant of "contour *versus* separation," and the most significant feature of the "new departure" appears in the fact that it was a retrograde movement. It is partly in the nature of things, but at the same time largely a false mental attitude or habit of mind, that emphasis cannot be laid on one idea, system, or method without directly or indirectly belittling and condemning what appears to be its opposite. This is well illustrated by the mere mention of heredity and environment, of the great man as against social forces, of personal efficiency against equality of opportunity, of the progressive element as against the conservative element, a plausible conviction as against an exact demonstration, the uniformity of nature as against its diversity.

It should go without saying that these prominent and powerful factors which determine and control results are inseparably interwoven and co-operative in their action. Our discussions are too radical, tending to belittle the treasures of the past and to exaggerate the unverified theories of the present. The radical with his ignored personal equation seems to say that through him a great light dawns for the first time; and yet, on the other hand, new ideas, as exemplified by new discoveries and inventions, form not only the basis but almost the entire superstructure of material progress. By reason of this, the genuinely progressive man, even though in an absurdly small minority, is always certain to triumph. A record of patents that have failed is an eloquent and apparently convincing exponent of the other side. In brief, real progress depends on such a combination of selected ideas and methods as meet the demands and needs of the present and conform to the principles of development, and check or thrust from the field the forces of degeneracy.

To give these general points a concrete turn, it may be said that some of our leaders of a decade or two ago, who were too prone to be impressed by convictions, are being superseded by those who are convincing by demonstrations. But even the selection of methods may be carried to such an extreme that extension may practically mean contradiction. My central idea is this: *We need a variety of methods to meet a diversity of conditions.* We need to select and combine our few imperfect materials in such a way as to resist the forces and fluids that constitute the constant environment of all our operations. In this connection it is relevant to remark that even our most distinguished leaders are sometimes inconsistent and misleading, as has been shown, for instance, by Dr.

Arrington in the *International Dental Journal* for July. One may attempt to make the *quantity* of lime-salts,—not to mention their quality,—in the teeth of more importance than their organization in vital tissues, without being at all convincing; but when he makes rather inconsistent assertions take the place of demonstrations in such measurable factors as force or pressure, we cannot but regret his want of care or thought respecting a reputation which has been so widely and beneficially influential.

The ancients conceived life as simple and uniform, while the moderns find it most puzzlingly complex and confusingly diverse. Whether we accept or reject the broad statement that what is acquired is not transmitted, we can at least confidently affirm that the mind is gradually gaining the ascendancy and more and more controlling the environment; that the man of genius with an inventive tendency secures quicker recognition, and that a widely diffused intelligence is so developing the personal initiative that the masses of thoughtless imitators are being slowly reduced.

---

## IMPRESSIONS.

BY A. W. MC CANDLESS, D.D.S., CHICAGO, ILL.

**I**N the May issue of the DENTAL COSMOS for this year is a well-written article on "Artificial Dentures, with Special Relation to the Impression, Taking the Bite, and Articulation," by Rodrigues Ottolengui, M.D.S., of New York city. The object of this paper is not to criticize or find fault with anything that the author of that article has stated, but it is presented in the hope that the present writer also may be able "to sow a seed that is of advantage."

Without discussing the merits of the method of procedure laid down by the essayist, I will say what I have to say as intelligibly as I can and in as few words as possible, because I am not a man of many words. The taking of the impression, the preparation of the model, etc., as practiced by me is a development,—a growth, if you please,—from what I have learned of the methods of others, and especially of ideas gained from Dr. J. D. Patterson, of Kansas City, Mo., and of Dr. W. V-B. Ames, of Chicago.

Dr. Patterson demonstrated the use of base-plate gutta-percha with a certain addition of beeswax, if I remember correctly, for a trial plate. By putting this trial plate into the mouth and by applying to it heat at the particular point at which it should press more closely to the tissues, it could be softened and easily made to conform to the desired shape.

For some years I have been using what was formerly known as Head's "Ideal base-plate wax," a preparation with which dentists are doubtless all familiar. I was more successful in the use of this latter material, probably because more accustomed to it, and because I did not have Dr. Patterson's formula for the other.



Several years ago, Dr. Ames called the attention of the profession to the advantage of extending plates,—for full upper dentures,—back to, and slightly beyond, the point where the soft palate meets the hard palate. The impression of the mouth is taken with this object in view. I do not try to take a perfect impression by pressing stiff plaster into place, as that destroys the outline of the rugæ and is apt to press the buccinator muscles up too high. I try with the first impression to get a fairly good outline of the mouth and of the muscles, as nearly in their normal position as possible, by pressing the plaster up snugly under the cheeks and lip; then have the patient draw the lip and cheeks down as far as possible so that the muscles and the frenum may be clearly outlined. Into this impression a plaster model is poured, and on this model, which should extend well out at the sides and over the tuberosities, is fitted a pattern of Ideal base-plate wax. The model and base-plate are taken to the chair and a study of the tissues is begun. An application of the base-plate to the mouth shows the depth to which that part of the model which represents the soft palate should be trimmed. The pressure of the plate upon the hard palate is relieved, not by changing the trial plate at this point, but by scraping the model at every part that represents soft tissue, and the softer the tissue the more radical must be the trimming. If the ridge is soft and spongy, especially must the plaster be trimmed away here. This is simply a case of fit and try,—each time conforming the base-plate to the plaster model. If this method is persevered in, a base-plate is finally adapted to the mouth so perfectly that it becomes almost impossible to remove it. With a model thus prepared the succeeding steps of getting mold, die, etc., are proceeded with in the utmost confidence of ultimate success.

I should have said previously that if the impression cup is not perfectly adapted to the case in hand, a second impression should be taken by using the Ideal base trial plate for the impression cup. By this means the muscles are so clearly outlined that the finished plate does not encroach above the necessary limit to which it should extend.

I have in mind an elderly gentleman who had tried faithfully to obtain a snug-fitting plate. He had had a half-dozen continuous-gum plates made, but had been “universally and unanimously” disappointed. The anterior portion of the ridge had almost entirely disappeared in this case, and nothing but flabby gum tissue remained. He had been wearing artificial teeth for so many years that there was very little left to work upon. There were absolutely no undercuts remaining, even the tuberosities having disappeared. By following the scheme heretofore mapped out and by trimming the plaster model until it did not even look like a second cousin to what it was originally, I succeeded in obtaining a trial plate that held firmly to place. I prepared the die from this model and made a continuous-gum plate that has given this fine old gentleman a “world” of comfort for the past five years.

I think Dr. Ottolengui will find it quite unnecessary to vulcanize a plate twice if he uses the Ideal base-plate for a trial plate.

## SOME OBSERVATIONS IN CONNECTION WITH PYORRHEA ALVEOLARIS.

BY F. E. HOWARD, M.D.S., BUFFALO, N. Y.

(Read before the Eighth District Dental Society of the State of New York, February 25, 1902.)

**P**OSSIBLY no special work in dentistry calls for greater care and painstaking, and a more thorough knowledge of the surroundings for its successful management, than "pyorrhea alveolaris,"—or "interstitial gingivitis," as termed by some.

All advanced lesions in dental retrograde are better understood and controlled, by the majority of dentists, than this. By one prominent in dentistry it has been said, "It is the reproach of dentistry that the disease which causes the most trouble is the least understood." This subject will be a rich field for investigation for a long time to come. Although it has been touched upon by writers since 1740 (P. Fauchard) to the present, much is yet to be learned.

Dr. Jno. T. Riggs was among the first to give this condition special clinical attention, some twenty-five years ago, and for some time it was termed "Riggs's disease."

A great diversity of opinion exists both as to the origin and the treatment of this affection. It is fair to presume that the cause is sometimes local and sometimes constitutional, and at other times both. The disease has not developed with civilization, but dates back to the cave-dwellers, in this country. And "In the museum at Constantinople are the skulls of soldiers who fought at a battle in 328 B.C. One of the skulls has the anterior alveolar process entirely absorbed away; the roots of the right central, the right lateral, and the left central incisors are exposed." I only mention these cases to remind you that this disease is nothing that has manifested itself latterly.

Dr. C. N. Peirce charges the disorder chiefly to systemic predisposition, and enthusiastically advocates the theory of Reese, as to the influence of the uric acid diathesis.

Dr. W. X. Sudduth strongly argued for the lactic acid influence as a local factor in the disorder. He also speaks of this as a localized catarrhal stomatitis, which may be either acute or chronic.

Dr. Miller has expressed his opinion that the disorder is of a parasitic nature.

Dr. E. S. Talbot regards the disorder as local, due to both local and constitutional causes. The disorder begins with simple inflammation. He terms it "interstitial gingivitis."

Dr. J. D. Patterson has expressed the opinion that the disorder is of catarrhal origin, and states that, out of thirty-eight cases of well-marked pyorrhea observed by him, thirty-three presented undoubted evidence of nasal catarrhal conditions.

Dr. S. N. Niles considered that constitutional conditions were, as a rule, without influence, and local irritating deposits to be the cause in twenty-five per cent. of the cases coming under his observation. He was of the opinion also that the amount of calcium salts taken into the system in drinking-water exerted an influence.

A calcic and phosphatic diathesis has an influence in the production of the disorder.

Dr. Bonwill expressed the opinion that the disorder is due to thinness of the alveolar process between the teeth, such condition depriving the peridental membrane and gum tissue of proper support. The want of proper articulation of the teeth also exerts an influence. This theory is supported by others.

Dr. C. J. Essig was of the opinion that its predisposing causes were unknown, that it occurred as a rule in healthy persons, and that irregular and crowded teeth acted as an exciting cause.

Dr. G. A. Mills expressed his opinion that the disorder was of systemic origin. Various mental and physical influences aided its progress, such as nervous exhaustion and bodily and mental overwork. He notes that it frequently occurs with children and in convalescence from eruptive fevers, and considers that the deposit is only a local manifestation of the disorder. The exciting causes may be purely local, or may be local expressions of constitutional influences and states. "Thus it will be shown that the influence of the uric acid, when present, is exerted as a local irritant and not a constitutional factor. . . . The theory urged so strongly by Dr. Peirce, also advocated by Dr. Kirk, is the uric acid hypothesis, once very dominant in medicine, but now losing ground. The trend of medical opinion is to consider it one of the danger signals of auto-intoxication, which assumes prominence because of its tendency to excite local irritation." With a number of experiments conducted in different colleges,\* in the interest of this subject, upon some 900 teeth, it was plainly shown that uric acid was only a factor in these cases ranging from four to six per cent. and averaging only five per cent., so you will see that this is really very small.

Dr. G. L. Curtis says that real pyorrhea alveolaris is always caused by syphilis.

Dr. W. C. Barrett says, "There are three kinds of pyorrhea." He also says in this connection, elsewhere, that many men offer theories, but few prove them.

This disease is not confined to man alone, but affects dogs, cats, and other animals, as is shown conclusively by Talbot's experiments.

To sum up: My observations lead me to believe that pyorrhea alveolaris is largely local,—perhaps in some cases aggravated by constitutional causes. The local causes are lack of cleanliness, neglect or inability to keep the parts clean; deposits occur, and inflammation ensues, and from a single point the trouble extends.

In my judgment one of the causes to promote this disease is the fact that at the time of life when this phenomenon is presented these teeth usually possess a low degree of vitality, and in many cases they are not in harmony with their surroundings, the more vascular tissue, and these organs act as local irritants. They are

---

\*Rush Medical College; N. W. U. Women's Medical School; Columbia Medical Laboratory; Drexel Institute.



repelled by nature on the part of the higher organized and more sensitive tissues.

The teeth must be used,—they must have exercise by mastication. Pockets are formed that invite the retention of foreign matter, with fermentation, and disintegration enlarges the diseased territory. The alveolar process wastes away by absorption, the natural support of the teeth becomes weakened, and they loosen, go from bad to worse, and finally drop out.

It has been shown conclusively that the administration of certain drugs will promote pyorrhea alveolaris. Calomel, plumbic poisoning, brass poisoning, arsenic, iodid potassium, and tartar emetic, under some circumstances, will irritate the weak membrane. I find in a large percentage of cases, that the patient is afflicted with catarrh—many are of a catarrhal diathesis. I have observed that these subjects are not particularly prone to gout or rheumatism, neither do many appreciate that they have an excess of uric acid. On the other hand, I recall to mind many people that have been great sufferers of rheumatism and gout that have no tendency to pyorrhea alveolaris whatever, and they are well advanced in years. Many of these subjects are of a very robust and healthy class, never realizing that anything is wrong with them.

The dentist must see the patient often enough to keep off the deposits and keep down the inflammation. If this be accomplished the disease will be under control. The deposits must be removed from all surfaces, otherwise no amount of medicating will avail anything. If this be accomplished and the alveolar process be not too much absorbed, and the teeth not being in a very loose condition, a cure will be effected.

In order to accomplish much with this class of people, the dentist must have entire control of the case, and insist upon seeing the patient at such times as he may feel his services are required, whether once a month, or once in three months. The patient must be in the hands of one who understands the trouble thoroughly, and is willing to devote his time to the case, and the patient must do his part to carry out instructions, which should be explicit.

There is sometimes great advantage derived by devitalizing the pulp. Nature's effort to supply the pulp is relieved by devitalization, and greater energy is thrown into the cementum. At the time of life when pyorrhea alveolaris is present there is little call for pulps in the teeth that are marked by this trouble, and in many cases the teeth improve by extirpating the pulp and filling the roots. Of course this materially increases the expense of the treatment, for you are well aware of the labor connected with extirpating the pulp and filling the roots, but some do not consider that! If it will enhance the usefulness of the teeth, the expense certainly should not be taken into consideration. Operations connected with pyorrhea alveolaris cannot be of the cheap kind or order, for these cases cannot be conducted in a slipshod manner with the expectation of attaining any satisfactory results. It requires skill, the greatest painstaking, and thorough conscientious work, from start to finish.

In pronounced cases of syphilis, metallic poisoning, etc., constitutional remedies should be resorted to, but in a very large percentage of cases thorough local treatment is all that is required.

There are two things in connection with this subject that speak volumes. There is always local irritation, the presence of calicular deposits, or an atrophied or rough condition of the cementum. There is never any trace of the disease left in the mouth, where we have to resort to extraction. All is cured; no trace of the disorder remains.

After all the deposits are removed, germicides, antiseptics, astringents, and stimulants are used from time to time. These are made up of a long list that I need not enumerate. Medicate from time to time until a healthy condition is established. This must be supplemented by faithful care on the part of the patient, who should be willing to sacrifice part of his time to carry out intelligently the instructions given, and by the aid of the tooth-brush, floss silk, proper mouth-wash, and tooth-powder, oftentimes, this disease is permanently eradicated.

---

## THE CONTOUR MATRIX.

BY WM. CRENSHAW, D.D.S.

THE interest elicited in the matrix presented in the July DENTAL COSMOS, together with the demonstration of it before various association meetings, induces me to offer some additional uses of it which constitute no small part of its value, and which I have thought best to present separately and at a subsequent time.

In the cavities between molars and bicuspid, particularly in the lower jaw, in which the cavity extends beneath the gum and to the bottom of pockets formed by impacted food,—instances in which it is impracticable if not impossible to fix the dam beneath the decay,—the matrix comes in for one of its best uses.

After having prepared the cavity,—every detail of this feature of the work having been attended to,—fit and adjust the matrix, seeing that the lower edge of the band passes outside of and beneath the cervical margin. Apply the screw and force the teeth as much apart as is desired, bringing the upper edges of the bands together by compressing with pliers and by burnishing. If the operation is to be of gold, have ready and within reach the cushions or cylinders of gold,—or tin if that is to be used,—with the necessary instruments laid out and in readiness. Syringe out the cavity with warm water, and at once place beneath the nuts and screw-bar on the inside of the arch an absorbent cotton roll of suitable size, allowing the tongue to lie upon and press the roll laterally under the screw-bar and against the teeth. This remains snug and fixed in place. Place on the outside beneath the pin and tubes a suitable

roll. Place a saliva ejector held by the patient in position. Dry out the cavity, and if there is seepage into the cavity absorb whatever saliva and blood are to be found outside the cavity and immediately around the bands between and under the screw-bar and opposite side. After this touch the inside of the cavity with trichloroacetic acid. Dry out again and proceed with the filling. The matter of a very large cavity makes little difference in the time necessary to bring up the non-cohesive gold wall, since the cushion and cylinders to be employed should be proportionate to the cavity,—large ones for extensive decays and small ones for the smaller cavities. With the suggestions already made for controlling the saliva the operator has from twenty minutes to half an hour in which to place in the cervico-occlusal wall. This can be done, including the time consumed in malleting, in from ten to fifteen minutes.

If the lateral walls of the cavity are approximately parallel there need be no fear of the wall leaking, loosening, or falling out after the removal of the matrix. The operation ceases here until the matrix is removed, the dam applied, and the matrix placed in position again, when the filling may be finished with cohesive gold.

In those instances in which tin is to be placed in the cervico-occlusal wall the procedure is the same as that for gold; and in the instances where amalgam is to be employed throughout there is rarely need in the lower jaw to use the ejector, since there is ample time to finish the filling before the absorbent rolls become saturated.

The operation which in the judgment and expectation of the writer promises best results, though it must abide the test of time, and one which as far as he knows is original with him, is the condensing of tin in the cervico-occlusal wall and placing amalgam over it. The procedure for placing in the tin wall is that given for placing in the gold up to the point where this ceases. At this juncture without removing the matrix, finish the filling with amalgam,—placing amalgam over the tin as we place cohesive gold over non-cohesive. This operation is finished entire within the time the absorbents and the ejector control the saliva. The ejector is not needed in the upper jaw nor the absorbent roll on the palatal side of these teeth.

The placing of amalgam over tin with the tin condensed as we have opportunity to do does not affect the tin to an appreciable extent out of the mouth. The test and the result of the test in the mouth are yet to be seen. If there shall come chemical or electrical decomposition of the tin in the mouth, a test of some months fails to show it. Out of the mouth the tests show no appreciable change in the texture or density of the tin under the amalgam within the time mentioned. Tin under cohesive gold is a favorite combination with some dentists, which if not tabooed by electrolysis may be made in the manner described and after the procedure given for non-cohesive and cohesive gold in connection with the matrix.

The effort to make the cervico-occlusal wall of cohesive gold in connection with the matrix should never, in the judgment of the



writer, be attempted. And while the contouring of the teeth and the leaving of them in proper position with the matrix is attainable, the timid dentist who shrinks at the wincing of the patient under the operation of pressing the teeth apart sufficiently to secure the knuckle will not secure the results within his reach. This use of the matrix is not severer than the Perry separator.

To sum up, it will be seen that, with the matrix and the suggestions that have been made, a most difficult class of cavities in which the dam cannot be used can be filled, and that in a manner which secures the contouring and maintaining of the teeth in proper position and with more perfect results than has heretofore been practicable.

*Correction.*—In my article entitled "Cavity Management in Connection with the Contour Matrix," in the July, 1902, issue of the *Cosmos*, on page 683, lettering of Fig. 1, the letter "G" should read "C."

Also, the paragraph of three lines immediately beneath Figs. 1 and 2, page 683, beginning, "The bands are detachable from the nuts," etc., should be eliminated. The bands will not be detachable, but permanently attached with a screw and solder.

---

## PROCEEDINGS OF SOCIETIES.

---

### DENTAL SOCIETY OF THE STATE OF NEW YORK.

THE thirty-fifth annual meeting of the Dental Society of the State of New York was held at Albany, May 13 and 14, 1902.

Among the reports of committees presented to the society was the following, by Dr. A. R. COOKE, Syracuse:

#### REPORT OF THE COMMITTEE ON PRACTICE.

During the past year few changes of importance have taken place in the practice of dentistry.

The journals from time to time have had interesting and instructive papers with which you are all familiar and which need not be reviewed at this time. The educational problem has absorbed a large part of the essayist's attention, and the proposed increase in the time of the curriculum from three to four years is a step in the right direction. Such increase, together with the preliminary requirements now in force, should attract a larger number of intelligent students to the ranks of the profession,—men who can be expected to make decided post-graduate advancement and add to the fund of scientific knowledge of dentistry.

Prosthetic dentistry has received little attention in the reports of your committee for several years, and your attention is called to needed reforms in this department. It is safe to say that the average of mechanical dentistry is below the standard of years past,

and we may well ask, What is the cause? As long as neglect of dental sanitation and care by the patient exist, together with limited operative ability of the dentist, so long will it be necessary to replace organs lost by decay. It is therefore our present duty to see that those who have been unfortunate in this way are properly cared for. The prevalence of cheap advertising has lowered this class of practice, and the public are being educated to expect less year by year. That the number of advertisers is on the increase is an indication of faulty conditions somewhere, and the subject might well be the theme of a lengthy discussion. Either our colleges are lax in their instructions on ethics or we are taking in a large class of men who have no true professional ideas of practice. The public is being educated by the glaring advertisements of quack methods more thoroughly than we seem to be able to influence it in our daily practice, and a revolution must come sooner or later.

It may not seem within the province of this report to consider the effect of such methods, or the causes which lead up to them, but your committee personally has strong convictions on the subject and would welcome any effort to effect a reform.

No proposed change in practice of recent years has exerted as marked an influence upon preconceived ideas as the so-called "extension for prevention" theory, together with its corollaries. This subject having been so well presented at this meeting leaves little for your committee to report. We believe in these occasional upheavals, though some operators may carry them to extremes. The truth of the matter will at last be sifted out and our practice will be improved. That the ideas presented have merit no one will deny, and the final verdict must be in favor of the profession. It would have been of interest to have learned how far the ideas are accepted and taught by the representative colleges of the land. If we are to have extension, how far shall we go in our daily practice?

Your committee has long been impressed by the lack of uniformity and thoroughness in the preparation and care of pulpless teeth which are to be permanently filled or crowned. The increasing demand that every tooth and root be utilized in some way renders such condition the more deplorable. The increase of so-called neuralgic pains of the head and face which may with reason be attributed to the teeth is more prevalent than when extraction was the rule. The slight irritation of septic matter in imperfectly filled root-canals, although causing no local disturbance, is often the cause of reflex irritation which forces the patient to seek relief from the general medical practitioner. The so-called mummification processes and their application in any large number of permanent operations must finally lead to many complications, and your committee is loath to accept the findings of statistics showing universal success in these cases. It is only after the lapse of years that we shall be able to judge of the permanence of such methods.

Your committee favors the most thorough mechanical removal of all, or as nearly all as the ability of the operator will allow, of the pulp tissue and a thoroughness in the treatment of the pulp-chamber and canals which will preclude the possibility of tissue

disintegration after the canals have been filled with an antiseptic non-absorbent filling material. Such practice is strictly in accord with modern surgical procedure, and the oft-repeated excuse that other methods require too much time, patience, and skill is too unscientific to be considered.

The use of cotton and other absorbent materials, either in whole or in part, should be abandoned, and a more permanent material be substituted. A small piece of cotton at the apical foramen,—the most vital point,—is quite as septic and undesirable as a whole root-filling of the same material. It is notable that the greater number of abscesses and direct disturbances from septic matter in the root-canals occur upon small and tortuous roots, showing that the amount of septic matter has little to do with the case; it is the quality with which we are most concerned. The difficulties in treatment of these cases have been much lessened by the improvements in instruments and methods of recent years. The cheap-and-easy methods have many advocates, and it is easy to drop into this line of practice. "Whatever is worth doing at all is worth doing well," and the compensation should be in proportion to the thoroughness of the operation and the permanence of the result. That there are exceptions to this line of practice merely proves the rule, and one inclined to cavil can always find a crooked and inaccessible root to hold up as a horrible example of what must be expected of one who advocates such methods. Show a body of dentists a simple method of accomplishing a paying operation, and you have secured their profound attention in advance. The reverse is equally true.

Porcelain work has received the attention more generally of specialists than of the general practitioner. The fact that no insoluble cement has yet been found places us at a disadvantage in this line of work, as stated in last report.

Prophylaxis is receiving more general attention but not as much as the subject deserves. Our practice should be modified in this respect as well as our instruction to patients. In the care of the gums and associate parts, much may be done to prevent pyorrhea, and all should meet with the success claimed by some of our members in staying the progress of this much-discussed malady. Your committee considers that more can be done to ward off this trouble than can be accomplished by extensive operations after the disease is well advanced. It is therefore the duty of every practitioner to observe and advise those patients whose diathesis indicates any tendency to this trouble in later life. This service has been neglected, as it has not met with general appreciation and compensation. Recent discussions are doing much to advance the practice, although European methods are even more lax than our own have been. Patients inform your committee that it is quite impossible to have their teeth properly cleansed by foreign dentists, as these consider such service quite beneath their dignity. America must still lead the world in this, as in all other things dental.

Your attention is again called to the work of Dr. Michaels, of Paris, on the systematic qualitative examination of the saliva as



an aid to the diagnosis of general pathological conditions as well as the cause of dental caries. Some definite results have been secured, and the claim is made that by such tests the saliva is proved to represent the true conditions of the blood, and that a diagnosis of any well-known disorder may be made. The subject is deserving of very careful examination and it is pleasing to know that investigations are in progress in this country of which we may have more accurate reports than have been available of Dr. Michaels' work.

This, gentlemen, constitutes the report of your committee, which it is hoped may elicit an active discussion.

### *Discussion.*

W. W. SMITH, Rochester. It is unpleasant to me and unprofitable to you that I am obliged to open the discussion of this report with only a few hours in which to consider the subjects mentioned. They are important and puzzling questions; hours could profitably be spent in discussing any one of them, but I can only give a few hints. The report is clear and concise. I wish to criticize a little and emphasize more.

In speaking of the educational problem, the opinion is expressed that the proposed extension of time of the curriculum from three to four years would attract men who would be expected to make decided post-graduate advancement and add to the fund of scientific knowledge of dentistry. I admit it would seem more attractive to students who feel a pride in being associated with men of high literary attainments and who have the means of gratifying this desire; but as a rule these are not, in my opinion, the ones who make the most scientific advancement or who most promote the real advancement of the profession. Circumstances which compel boys and young men to earn their own living very often develop a character that is needed in the dental profession. Such as these are doing the world's work to-day, and we can with reason expect them to be the prime factor in advancing the world's interests in the future. They are especially needed in the dental profession. Neither four nor ten years would make creditable and progressive dentists out of a large majority of those who would be attracted by such extension, and it would exclude many who are needed, and cripple others to an extent that would be a bar to their making post-graduate advancement and would place before them a temptation to resort to unprofessional methods of practice in order to meet their financial obligations. I admit, this is a hard question to solve; commercialism enters so largely into all our professional activities,—and very naturally, too,—that we cannot expect ideal conditions. What is needed is a higher standard of teaching, and the excluding as far as possible of matriculates who have not the elements of true professional success in them. I say these things guardedly; I am dealing with generalities.

This leads to the matter of ethics which the essayist has mentioned farther on. If I am correctly informed, there is not much ethical teaching in most of our colleges. Surely it does not mani-

fest itself very strongly in the characters of a large number of the graduates coming from the colleges. It would be unfair to hold the colleges responsible for all incompetent and unethical practitioners coming from them; these elements may be in a student and yet not manifest enough to justify his exclusion, while so strongly rooted in his nature that no amount of teaching would eliminate them. There always have been and probably will be men of this character in the profession. No amount of legislation or ethical rules or pledges will eliminate them, for the very worst class of these offenders consists of those who are strictly legal and ethical as far as the letter of the law goes.

The matter of prosthetic dentistry should, as the report says, claim more attention. I cannot, however, quite admit that it is on the decline. Cheapness and incompetence comes to the surface, but beneath this, it seems to me, we can observe great progress. Neither am I pessimistic in regard to the future,—in view of the statement made that “cheap advertising has lowered this class of practice.” I believe that this will have its reaction, and sooner or later real worth will be sought after, and the less the matter is agitated the sooner we will see those happy results.

I have not had the time to prepare any detailed discussion of the other subjects mentioned. I heartily agree with what is said about “extension for prevention,” also that of pulp-mummification and the treatment of pulpless teeth. I wish to emphasize what has been so well said.

In the matter of prophylaxis there is certainly a field for more constant and advanced instruction and practice.

Dr. Low, Buffalo. I read in the *International Dental Journal* an article by Dr. Smith, of Philadelphia, during the present year, in regard to the treatment of the gums and teeth, particularly of young patients, looking toward more frequent and more careful attention, and it struck home to my heart more than anything I have read during the year. I believe the next important step of progress in the conserving of the human teeth will be taken when some means shall be devised that the treatment shall be at least attended to as often as once in two weeks.

I read a little paper before the City Dental Society in Buffalo, in which I advocated that we should establish a new profession,—that of odontocure,—a girl with an orange-wood stick and some pumice-stone, and possibly a flannel rag, who shall go from house to house, and fashionable folk shall have that nasty condition in their mouths attended to as often as once in two weeks. I want to ask if there is anyone in the room who knows anything about the success attained by Dr. Smith.

Dr. Kirk told Dr. C. S. Butler, of Buffalo, that he had seen very wonderful results attained by Dr. Smith in his treatment of the teeth of young people,—teeth which were almost opaque had become much more translucent. The mere movement of the orange-wood stick upon the enamel wall, and the massage of the gum, had resulted in an entirely different appearance of the teeth. If this is true, we should consider that one point with especial interest.

The PRESIDENT. There are several gentlemen present who have had an opportunity of seeing some of Dr. Smith's patients, and we would be very glad to hear from them.

Dr. FRENCH, Rochester. A family of patients of Dr. Smith have been under my care for the last year. Dr. Smith has believed that cleanliness was a little ahead of godliness, and he has been trying to improve on that. The care he has given the teeth, and the results attained, are almost marvelous. It is like a business proposition: he guarantees that if people will have their children's teeth put in good condition, and then bring them once every month to him for a thorough cleaning, he will take charge of them from that time on; but they must come once every month to have the teeth thoroughly cleaned, and he will see them, they paying five dollars each time. It would be a paying thing for the dentist, and certainly much better for the patient. This family were patients of his in Philadelphia. The results I have seen, and the ideas I have obtained from the wife and mother of the family, are something almost incredible. It would be well worth our while to see what we could do. He particularly insists that no instruments shall be used beyond the pumice-stone and orange-wood.

Dr. SANGER, of Orange, N. J. I had the pleasure of being one of Dr. Smith's guests, and of seeing some of the most satisfactory work it has ever been my lot to witness. Dr. Smith had at least a dozen patients, of varying ages, present. His method is apparently one of thorough prophylaxis. He believes that prophylaxis does not simply mean the removal of salivary calculus and stains, and what you would call the cleaning of the teeth, but the thorough scouring of every tooth, by that process producing a stimulation of the teeth and the gums. It is heroic and vigorous, and the patients writhe a little while he does it; but the results were all so thoroughly satisfying that he has a *clientèle* of people who are attached to him, regarding him as the savior of their otherwise hopeless teeth. He showed us cases where the teeth were so loose, according to his statement and the patients', that it seemed impossible to do anything with them. He cleaned them thoroughly, tightened them and utilized them for the attachment of bridges, and succeeded in making the attachments firm for a number of years, and they seem as good to-day as they must have been when he put the bridges on. He does not confine himself to the use of pumice-stone and orange-wood, as has been said. He has a set of scalers which he uses vigorously on the teeth, and you would think, to see him go at it, that he would take the enamel all off. He claims, and seems to demonstrate, that a tooth thoroughly massaged, if I may use that term, seems to gain force. He showed a tooth that had a white stain, which was gradually being eradicated by the stimulation of this rubbing process, so it has been reduced, according to the patient's testimony, from a stain covering almost the surface of the central incisor down to a little mark at the cutting edge, which he was not sure whether he could remove or not, as it was so remote from the point of supply. I can only speak in the highest terms of his work and the results.



To appreciate and understand his methods, it is almost necessary to see him do it. I know nine-tenths of the practitioners would be frightened to go at the teeth as he does, until they had it proved by some one's else testimony or by their own experience that the method was correct.

Dr. HOFHEINZ, Rochester. Since I had the pleasure of reading Dr. Smith's article, I have made it a rule to be more prophylactic than I used to be, and that is the only difference between Dr. Smith and most of us. Prophylaxis is not new. I have a number of patients coming to me every few months, and I expect to increase their number. I have seen wonderful results, as far as the gum tissues are concerned. I cannot quite conceive from a physiological standpoint how a difference in the tooth-structure can occur by this external stimulation, and I am willing to listen to some of our physiologists and pathologists who are present. There is no question that owing to the extreme amount of cleanliness and friction upon the enamel, the color changes owing to the absence of external deposits, but I cannot understand how the teeth may be stimulated from the outside and have the physiological character changed. Dr. Smith's work has certainly done us a great deal of good, because it has stimulated us to a higher degree in doing the prophylactic work which is and remains the best dentistry.

I wanted to discuss one point in Dr. Cooke's report, and that is in regard to the four years. I do not know of any college of repute which does not welcome this new method. The studies of dentistry didactically and practically have become so much more comprehensive than formerly, that three years is not sufficient to produce a perfect specimen of a dentally educated young man or woman to go out into the world and do that work for which they are destined, and which they ought to do well; and yet I do believe that it is less the question of four years' education in the college than the question of specific preliminary education before entering the college. I would argue on the same basis that I did at the National meeting some years ago, but time does not permit.

Another question has arisen,—the question of ethics, for the absence of which sometimes the colleges are blamed. I think that is totally wrong. I do not believe there is any college,—I certainly can include the one with which I am connected,—that does not teach dental ethics. I have one case in mind where one of the finest operators I ever met finally joined the ranks of advertising men. Ethics is not within the power of the college. It is entirely apart from dental teaching. A man may remain in a college until doomsday and you may not make a gentleman of him. It must be born in him, and it is apart from education after a certain time in life. The proper professional instinct which shall equip men for professional life must be born in them and can never be taught in colleges. Teachings and surroundings will add much to its development, but after all it is a force innate in men themselves.

Dr. WEBSTER, Toronto. I am very much interested in this subject of ethics from the teacher's standpoint. I have written a couple of articles on that subject, and have studied it from the

student's standpoint, too. I have had personal acquaintance with students for eight or ten years, with more or less knowledge of what they do after they graduate. I have gone into the subject trying to find out what kind of early training these men had who go, as we say, "wrong." The chief cause I believe is their early training. They have been at some business occupation previous to entering dentistry. Take a man who has been a salesman, a peddler, a Jack-of-all-trades up to the age of twenty-five years, or even twenty years, and you cannot make a professional man of him. You may work on him as long as you like; as Dr. Hofheinz says, he is molded before you get him. The only kind of man you can make a professional man of is one who has professional instincts within him, and has not been at some other occupation previous to entering dentistry. It does not follow that every man who has been at a business occupation is not a professional gentleman afterward, but by looking at the records of these men I have found this to be as I have stated.

There is another class of men who cannot do anything else but be quacks. They are licensed to be dentists although they are not qualified to be such; consequently they are more likely to be quacks. That is what must be expected. They are unable to get the fine technique necessary for dentistry, at a late day in life, unless they have had a previous education in manual training.

Dr. HOFHEINZ. I would like to have an answer to the question I asked,—Where the stimulation comes in from this external prophylaxis?

Dr. RHEIN. I do not know whether I can satisfy Dr. Hofheinz by the answer I will give in regard to that, but before answering him I might revert to the subject that has been under discussion,—the subject of prophylaxis and its general advantage as expressed in the recent papers that have been published by Dr. Smith, of Philadelphia. I agree very thoroughly with the view expressed by Dr. Hofheinz that the doctrine enunciated by Dr. Smith is nothing new. It simply has not been put into general practice. For a number of years I have been practicing virtually the method that Dr. Smith has been enunciating. I have also been advocating it publicly, and I hope that the impulse that has been given in this respect will continue to grow, because I have not the slightest question as to the advantage that accrues to a young patient from putting his mouth in such condition as to render him immune from caries to a very large extent,—that is, if your instructions can be faithfully carried out.

Dr. Smith told me he has been very much misquoted in regard to a number of his ideas in reference to the every-thirty-day point. He does not pursue any such foolish plan as to endeavor to see every patient every thirty days. I simply say that in justice to Dr. Smith. It is necessary to use a certain amount of common sense in regard to the conditions of the different patients you handle.

Personally, I have found it impossible to attend to this part of the work myself, because it assumes too large a magnitude. I

have found it necessary to have an assistant entirely for this purpose, otherwise it would be impossible for me to do any of the ordinary dental operations; and the only point I cannot understand in regard to Dr. Smith's practice is how he can give sufficient time to this work. I find it perfectly feasible to take up, at the present time (and have for the past seven or eight years), at least four days' work of an assistant for no other purpose than this. If I were to give that much time out of my own labor it would leave a very insignificant time to do other dental operations. I believe a woman is especially adapted for work of this nature, and am convinced that if she has a sphere in dental work, it is in regard to this prophylactic work. I say that for this reason: the work requires a great deal of patient manipulation in a line that has a great deal of sameness to it. There is a danger of getting tired of the monotony of the work, and also a danger of not being thorough enough and giving sufficient time to the work on account of this monotonous character. Personally I indorse the results Dr. Smith has attained, especially in the treatment of the teeth of children between the ages of five and seventeen years, during the time when their teeth are most prone to caries. I am convinced that the benefits, during that age, of frequent cleansing,—because it is nothing more than cleansing,—of all the surfaces of the teeth in the method so beautifully enunciated by Dr. Smith is productive of the very best results.

In my attempt to answer Dr. Hofheinz's question, I want to say that the way the matter strikes me in the results that appear to the eye, as far as the character of the enamel surface of the tooth is concerned, is simply this: I do not believe that we get any distinctive improvement in the enamel surface. What we do is to continually combat the bacterial plaques so beautifully illustrated to us by Dr. Williams' paper some years ago. The constant polishing of the enamel surface removes those plaques and prevents their re-formation to any extent. That is the point,—we get the real enamel surface without the damage done by these plaques, and I believe when I am answering in this way, I am practically indorsing the opinion held by Dr. Hofheinz himself. We do get an improvement to all apparent purposes, but there is no real change that goes on in the enamel. We are keeping the enamel free from the damage that has been done to it, both in sightliness and in ulterior damage from these deposits.

Dr. OTTOLENGUI. It is barely possible that Dr. Rhein is wrong. I do not know that there is any scientific basis in the suggestion I am going to make, but as our specialists are engaging their attention with investigations of the fluids of the mouth, I would like to throw out a hint. A thousand teeth, extracted and examined after they have become dry, are all apparently of the same color, excepting of course such teeth as have been badly discolored by disease,—but I mean sound teeth. It was noticed as a curious fact, and never thoroughly explained, that implanted teeth assume the color of their neighbors. That being true, it means that a tooth which would be apparently colorless because dry, might be put in



the mouth of a person with a yellowish cast of teeth, or a bluish cast, and in the end it would assume the appropriate color. What does that indicate? It seems to me it means, if anything, that the color of the teeth largely depends upon the fluids of the mouth, which they absorb. It seems to me possible that this extreme prophylaxis, which brings a patient periodically to the dentist for cleansing, and which induces that patient to do more thorough cleansing at home, will not only remove the superficial stains and plaques from the surfaces of the teeth, but may very materially alter the conditions of the fluids of the mouth, and in that way it is quite possible that the color of the teeth might be improved.

I am not a bacteriologist nor a chemist, but I have observed a few clinical facts, and they make some impression on me; and it is a fact that those people who are most particular with their teeth will have teeth of more beautiful color, more lustrous enamel, and generally what we might call a lighter and more uniform shade; whereas people who are careless with their teeth, who only have them cleaned by a dentist when it is absolutely necessary, have various shades in their mouths, even in adjacent teeth. It is possible that this extreme prophylaxis alters the condition of the fluids of the mouth, and thus contributes to the improved color of the teeth.

Dr. JARVIE. This subject is exceedingly interesting, but I will only occupy a few minutes. I need not say a word in regard to the necessity or wisdom of as perfect prophylaxis in the mouth as possible; but I want to say something regarding discoloration upon the enamel, and its effect upon the shade or color of the teeth. No scouring of the enamel or massage of the gums will affect the composition of the enamel in the least, but it will have the same effect upon the enamel of the tooth as polishing would have upon the granite on that wall we see through the window, or upon any piece of marble. It will not affect the structure in the least, but polishing will so change the surface that it will seem to become translucent. After polishing it would appear as though one could see into it at least one-quarter of an inch, whereas now it seems not only an opaque but an unreflective surface. A tooth does not derive its color from the enamel. That is derived from the dentin, and by the translucence of the enamel we get the varied shades. The difference in shade is caused by the difference in the pigments in the circulation. The complexion of a blonde or a brunette is not due to the difference in cleanliness of the skin, but to the pigments in the tissues beneath the skin, and so it is with the differing shades of teeth. It is due to the color of the dentin appearing through the translucent enamel.

Dr. SANGER, Orange, N. J. I want to give the explanation, as I understood it, which Dr. Smith gave us in regard to the white marks. He claims these white marks were not on the surface, but underneath the enamel, between the enamel and the dentin; that they represented in the teeth what the white marks represent on people's finger-nails when they are poorly nourished; that through the rubbing there was a stimulation of the circulation which

strengthened the tooth and filled in these spaces with tissue. I do not know whether that is so, but that is what he told us. He claimed a physiological change. The change takes place in the dentin, not in the enamel. The enamel is a semi-transparent covering of the dentin, but the color is in the dentin.

Dr. Low. It is a fact, as I have stated, that the structure of the teeth resembles that of the hair and the nails. It has been my experience, and that of other gentlemen, that when the human nails are given massage,—if you take the two thumb-nails and rub them together,—the blood-current is stimulated to that extent that even the end of the nail, where it is long, is less likely to split and crack. Whether it has gained that condition while it was still live tissue, or not, I do not know; but the mere rubbing with an orange-wood stick and some pumice-stone upon the enamel of the tooth will call such a superabundance of blood-supply into the dental pulp from the peridental membrane that that tooth will be benefited. For that reason we should go even beyond Dr. Smith. Of course, dentists who are very busy cannot give the time to this, and Dr. Rhein struck the keynote when he said it was for the woman to do. The time we will make marked advance is when we have the odontocure. She will not do it as thoroughly as Dr. Smith, and she will get perhaps fifty cents for it; but fashionable folk will have it done because it is fashionable more than because they feel the need of it. I have had young patients, both boys and girls, come in with conditions that are positively filthy. They are the children of wealthy people, and they cannot be driven into the bathroom to manipulate the tooth-brush. If it were the fashion to have the odontocure come and polish up the teeth with a little red powder, nicely spiced, and these young folks of fifteen or so could not go to a full-dress party unless they had had their teeth all polished up, we would gain something. I think that is the way we might accomplish it.

Dr. RHEIN. Since Dr. Low has quoted me in this matter, I will say that I do not want to stand sponsor for the family odontocure. I think the evil they would be apt to do would be greater than any benefit. While I am very much in favor of turning this work over to a woman assistant, I think it should be done only under skilled advice, and I make that very emphatic. There was one little point that escaped me, and that is the advantage to be gained from massage itself in these cases, which is undoubted. Some improvement is obtained through improving the capillary circulation. I do not refer to the pulp circulation, but the circulation that comes to the gum,—that fine anastomosing circulation that comes there.

I spoke some years ago of my own technique in this work, which goes beyond what we have listened to, and that is the electrical massage of the gum itself in these cases. I have had the most excellent results due to the improvement in the capillary circulation of the gums. I simply want to throw out that point for the benefit of those gentlemen who are interested in the practical side of the question.

(To be continued.)

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

(Continued from page 729.)

THIRD DAY.—*Afternoon Session.*

THE meeting was called to order by the vice-president, Dr. L. G. Noel, at 2.30 o'clock.

Dr. GEO. S. VANN, Gadsden, Ala., submitted the following report:

## REPORT OF COMMITTEE ON MATERIA MEDICA, THERAPEUTICS, AND PATHOLOGY.

Since the last meeting of the Southern Branch in July there have been recorded no conspicuous discoveries or developments within the province of materia medica and therapeutics, but your committee would call attention to "cloretone," which is claimed to be a mild local anesthetic having no deleterious effect upon the heart's action, and possessing considerable antiseptic properties. Also "adrenalin," which is one of the best hemostatics on the market, and in oral surgery has been found to act promptly in checking hemorrhage from the gums, or that following nerve-extirpation.

In reviewing the subject of pathology, we find an interesting description of the pathological processes in an unerupted tooth by W. D. Miller, of Berlin, a case illustrating plainly how easily "discoloration, due solely to dried blood, with which the cavities become filled during extraction, might be mistaken (without careful investigation) for caries of an unerupted tooth, thus leading to false views concerning tooth caries."

Another valuable paper under this head is one of almost revolutionary character on "Pyorrhea Alveolaris with Special Reference to Practical Medicine," by Dr. William Baldwin Keyes, London, appearing in the DENTAL COSMOS for January, 1902, in which he sets forth the tendency of most modern thought to show that so far from gout and rheumatism being the cause of pyorrhea alveolaris, they are often the effect, and that these general systemic affections, and many stomach troubles, are the direct result of the chronic poisoning of the tissues of the patient by the toxins of pus produced by the disease in the mouth. These statements corroborate a prophecy made as far back as 1873 by our esteemed friend Dr. J. Y. Crawford, at which time he asserted that "medical practitioners would never be able to combat, successfully, the phenomena of disease in the human system until they recognized the importance of the condition of the oral cavity."

In the way of original matter for the present meeting, your committee begs leave to submit the accompanying papers.

Dr. GEO. S. VANN, Gadsden, Ala., then read the following paper on

## APATHY IN THE DENTAL PROFESSION.

The reviewer who has spent the greater part of the past few years in setting forth the progress of the nineteenth century and praising its marvelous achievements, would do well to remember that every century of the past has been regarded as a wonderful era when compared with its predecessors; that the advancement of each succeeding one is only made possible by all that has gone before; and that no great character or event in history stands alone, each being the product of a thousand contributory influences. Consequently if we would form an unbiased judgment of the attainments, present status, and future of dentistry,—which, known as a profession, is the offspring of the nineteenth century,—we must



review the preceding periods, and study their bearings upon its development.

That dentistry is to some extent an ancient art cannot be questioned, but so barren of practical value are authentic references to the remote past, so chill the night of that age, when barbarous hordes from the East overran the lands of culture and civilization, enshrouding learning, science, and the arts within its pall of ignorance and superstition, that it is an almost fruitless effort to trace the faint thread of its existence, until we emerge from the darkness of the middle ages through the triumphant arch of the fifteenth century into the light of modern times.

Thus the *fifteenth* century, characterized as it was by a general awakening of the European mind from the lethargy of the dark ages, stands at the beginning of a new order of things, and becomes the first period of a cycle of unprecedented progress. During its earlier years new life and energy were infused into every department of human thought and enterprise, and the scattered treasures of preceding ages were gathered up and utilized as a foundation for modern civilization. By the middle of the century, gunpowder, the printing press, and the mariner's compass were contributed to the world's material advancement; and toward its close the progressive portions of civilized humanity were pushing, toward the western limits of Europe, in the direction of that "continent of the future" which, discovered in the last decade of the century, came just in time to aid in the new growth of ideas, moral, intellectual and scientific, by offering the new world for their development free from the superstition, bigotry, and intolerance of the old.

But, however remarkable the progress of the fifteenth century, it was along material lines; its energies were concentrated upon matter rather than man, giving him hitherto unknown continents for civilization, but accomplishing little for him as a moral and social being. Therefore, that man might remain master of the situation, the *sixteenth* century turned upon the pivot of human interest, developing the individual, through the religious upheaval known as the Reformation, upon the emotional or moral side. During the *seventeenth* century, so general was the dissemination of knowledge that the people became sensible of their intellectual powers and of their needs and rights as men. This consciousness found expression during the *eighteenth* century in a popular demand for civil and religious freedom, culminating in the liberation of the American colonies and their union under a republican form of government.

The cycle of dominant individualism being now complete by the development of the moral, intellectual, and executive faculties of man, and the increased powers of the individual, being concentrated upon the conquest and betterment of his environments, the race is prepared for the appreciation of, and to be partakers in, the organization of that profession which harmonizes in its being the progressive trinity of science, art, and mechanics, the latter in its artistic perfection being the practical expression of scientific prin-

ciples and theories relating to the treatment of the oral cavity and adjacent parts. That Americanism, which is regarded as the highest type of the new order of things, might have the proper material for the development of the dental profession, history now repeats itself by returning to the material plane of the fifteenth century, which is evidenced by unprecedented geographical discoveries, great inventions, and territorial expansion. The spirit of industrialism and commercialism has dominated all the activities of the nineteenth century, and as a result we have enormously increased capital and production, the concentration of large masses of people in cities, and the growth of social, commercial, religious, and labor organizations. Thus the nineteenth century has prepared the material way for the social reorganization of the *race*, as the fifteenth did for the uplifting of the *individual*.

In this new cycle of progress, what is to be the mission of the *twentieth* century? Present conditions and the orderly sequence of history lead us to believe that it will be the parallel of the sixteenth; that human interest will prevail over material development; that emotional activity will expand into esthetic and ethical life; and economic thought be directed chiefly, not to wealth-production, but to wealth-distribution for the uplifting and well-being of mankind.

Therefore the passing of the nineteenth century and the dawning of the twentieth presages much to the student of affairs interested in the ethical and sociological progress of the dental profession; *how much* depends upon the capacity and powers of the present membership to address themselves to the problems developed by the industrialism of the past century, which are already pressing for solution.

Happily, time and memory travel in opposite directions, and it is our privilege to-day to review the unforgotten past of modern dentistry, to catch its spirit and to learn its lessons, thereby preparing ourselves for a better performance of the duty which lies nearest us, an intelligent progress in the new century, and gaining a nobler conception of our inheritance as a profession.

Now, in order that we may apprehend more fully the material difficulties of the pioneer period, and by contrast show how great a debt of gratitude we owe the fathers of the dental profession, imagine the operator of to-day divested of all modern appliances and methods; empty his cabinet of its array of instruments and late preparations of gold, take away the rubber dam, remove his electrical appliances, obliterate his knowledge of anesthesia, of pathological conditions, of bacteriological investigation, and all ideas of fermentation, sepsis and asepsis; which, together with the elimination of educational and associational features, leaves him alone and barehanded, enveloped in an atmosphere of suspicion and indifference, laboring behind closed doors to forge out as best he can the *tools* necessary for his work.

But this condition of affairs was the hour of deepest gloom that precedes the dawn, toward which a few men, before whose vision had arisen the future possibilities of an organized profession, turned

their faces. With the coming day there was much to be done; so, contradicting the negative attitude of their forerunners and contemporaries, they put into practice the golden rule of life, and lo! it became a creative force, generating fraternal feeling and elaborating itself into a written code to which all could subscribe. It drew men together in societies, unlocking their laboratories and teaching them that upon mutual aid and reliance rested the future of dentistry; enlisted the sympathy and energy of those capacitated to write books and publish magazines in the interest of the dental science and art; and inspired philanthropic ideas which enabled them to establish colleges with scientific and technical training for young men. These halls of learning are to-day the fitting memorials of noble lives of sacrifice, in comparison with which a Trajan's column or Hadrian's mausoleum seem monuments of self-advertisement.

These early promoters of dental civilization labored faithfully and ceaselessly during the first twenty-five years, their difficulties and failures suggesting new methods of practice. Then, as a reward of genius, patient industry, and skill, came almost within a year the material contributions of the rubber dam, the dental engine, the cements, improved disks, the mallet, and cohesive gold. Colleges were next endowed, literature broadened, and dentistry was enrolled among the learned professions.

All this and more was accomplished within the span of a lifetime, and a profession pre-eminent for scientific discoveries and mechanical convention, united in local, state, and national association, with an educational center in almost every state in the Union and a literature second to none among the learned aristocracies, is the rich and unspeakable legacy of our fathers to the rising generation, with which to buy the opportunities of the present and future; requiring on our part strength and rectitude of character, minds well trained and stored with knowledge of the arts and sciences relating to practice, skill in the performance of all operations and constructions, and a readiness to defend and advance the honor of the profession at every point.

Confronted by this proposition, the question naturally arises in the mind of every American dentist, Do I measure up to this standard? Am I equal to the emergency, or shall I, like the prodigal son, waste this great inheritance in a riotous manner?

Leaving each one to a thorough self-examination before making answer, let us consider some of the influences and elements which go to make up the present professional status, to the issues of which the dentists of the twentieth century must give themselves if they maintain and advance the standard.

The first aspect of the situation with which we must familiarize ourselves is present environment, and its relation to the profession. We must take the world as we find it. We must remember that the nineteenth century was eminent above all preceding ones for mechanical and industrial evolution, and that therefore the tendency naturally is from the ideal to the practical, from the development of the ethical to that of the commercial spirit, from the individual as



a laborer in a worldwide field to a monopoly of the world's products depending upon machinery and organized labor; that the energies of these combinations, both capital and labor, are directed toward the accumulation of wealth, overturning, in their rush after the "almighty dollar," the business customs of the past, and setting up in their stead sharp and scientific competition. As an outgrowth of this general condition there is a disposition on the part of the people to demand quick and large return for the least possible effort; and as the employments of the lower classes gradually approach, by reason of their relation to progress, to the dignity and influence of the "profession," the idea, so seductive to those accustomed to manual labor, is suggested, of substituting head-work for hand-work, conceiving it to be more honorable, less arduous, and a quicker way of making money. Hence we see professional ranks crowded, by an overwhelming majority, with recruits from the laboring classes, bringing in perforce an atmosphere of materialism, trade, and competition altogether foreign to the professional spirit, which, depressed and aggravated by the petty jealousies and trials of everyday life, degenerates in most instances into a chronic state of apathy with respect to the principles and practice of ethical reciprocity. This condition assumes dread proportions since we know that all enthusiasm concerning higher and nobler things, all professional progress in the right direction, depends upon ethical culture and surroundings, and that the lack of it is the first step downward from the present high plane to the business strata.

Nor is cause for anxiety diminished when we further see this commercial influence organizing its forces within the province of the profession in order to take advantage of the individual worker. Allusion is had here to the tendency already established in business circles "of organizing activities along economical lines." "Of course," says a thoughtful writer, "as long as it is necessary that professional work be personal, and not subject to the competition of machines, just so long will it be impossible to completely crush out competition in law, medicine, or dentistry," but there is already such a thing as the "combination of lawyers, doctors, and dentists," so that "by the division of labor" and "economy in fixed expenses" prices can be proportionately lowered so as to attract the public and yet increase the dividends of companies.

This force has been felt in all the professions illustrated by the trust companies in law, who employ men willing to pawn their diplomas for a fixed salary, in return for which they perform the menial services of collector and scrub advocate; the multiplied sanitariums, private hospitals, and medicine companies of the mushroom type with which the physicians have to contend; and a system of organized and legalized quackery in dentistry, which reaches its fullest attainments in the "dental parlors" and "emporiums" of our streets and avenues, in which ethics plays no part, the chief or only object being to "make money," by all the devices of trade, the main dependence being advertising and underselling your neighbor.

Now, since it has been shown that this hydra-headed element of abnormal numerical force, and the organization of its excess, exist

in the dental profession, it should be further recognized as the most demoralizing factor in professional life. Dentistry from its very nature having less of the purely personal element and more of the mechanical, is peculiarly susceptible to business influences and methods, and in large cities, where organization and competition are most active, the animating spirit of the profession is dejected and the financial returns for meritorious services rapidly on the decrease.

Therefore no practitioner will fulfill his professional obligations who does not interest himself in young men of his jurisdiction who contemplate studying dentistry, discouraging those whom he clearly sees are unworthy and incapable, encouraging the skillful and industrious, and so living that his example will be an ethical guide. He should also counsel the student in regard to his educational plans, advising him to go where such high ideals of honor and right living are inculcated in the prospective graduate as will not only eliminate as far as possible all undesirable qualities, but enable him to resist the temptation of commercialism in shaping his future policy.

This brings us with the candidate to the college portal of his respective choice; and may we not congratulate ourselves when we recall the action of the National Association of College Faculties at Milwaukee, whereby was added another year's course to the three already required?—may we not congratulate ourselves, I repeat, that these institutions of learning, equipped with every modern appliance, and manned by a corps of distinguished educators, stand like fortified castles of old at the entrance of the profession, guarding its interests? May we not rely upon the preliminary examinations of such institutions to be selective in quality, directing every energy toward discriminating with respect to the prerequisite training of candidates, their fitness, and love for professionalism? May we not also believe that the environment of student life, while within their walls, will be pure, clean, and ethical? that the restraints thrown about them will be conducive to study, to the formation of good habits, and to the conservation of their time, money, and energies? Discipline of this nature *will* bear fruit in the lives of men, and do more to overcome the spirit of commercialism and competition than any other force. And when a year's technical training is required as a further test of personal fitness for matriculation, and a chair of dental history and ethics has been established, the seeds for the development of a nobler strain of professional life will have been sown during the collegiate course. In the meantime it should be the privilege and pleasure of the profession at large to support and encourage the National Association of College Faculties in every good word and work, for they can never without impairment of their practical efficiency be either far in advance or far behind the period and profession to whose educational needs they minister.

Unfortunately, it is impossible to appeal to the profession as one grand and united body along any particular line, because of the several factions into which it is divided, which arrange themselves

into three classes: The truly professional body, who have complied with the law and organized themselves for the purpose of supporting it at every point, and of advancing the interest of the profession; secondly, that class which having complied with the letter of the law studies to evade it; and the third class, usually known as quacks, who are unable to appear before the board for lack of preparation, and practice in open defiance of the law. The schemes for accomplishing this are many. Generally the quack uses some licensed practitioner's office as headquarters, and enters into league with the court officials by a promise to do the family practice gratis, which arrangement entitles him to all the rights and privileges of the district. Now having mapped out his course he makes up his pack, which consists of sundry articles, together with his gun, dog, and fishing-tackle, and the journey is begun. His dates having been advertised ahead and noised abroad, the neighborhoods are anxiously looking forward to the coming of the genial tooth-carpenter, who on his arrival perceives he is in luck and proceeds to business. Having nothing invested he feels at perfect liberty to make agreeable terms with all applicants, and in case he works for the entire family he takes it by the job, making sure of all the cash he can get, the rest in barter. In his selection of filling material he leans to the plastics, finding it difficult to live up to the gold standard; is blissfully unconscious of the treatment of pulpless teeth, and is usually successful in the long run of clearing his patient's mouth for a complete set "of chiny." This manner of practice he continues, alternating his operations with hunting and fishing expeditions until he makes his entire round. Then begins the "retrograde movement," gathering up his barter here and there on his way to market.

Little as you may think it, this kind of business has a most depleting effect throughout this section of the country, inasmuch as he, through ignorance, establishes a misconception concerning the nature and value of dental operations, and produces a prejudice in the minds of a great many good people by denominating the truly ethical man an extortioner.

But this phase of practice would not necessarily give rise to any great degree of anxiety, were it not for the overcrowded condition of the profession and the organization of its superfluous members, which gives rise to the second class referred to above, who having made suitable proficiency and complied with the letter of the law, establish themselves within our very gates. The situation which here presents itself is one over which we may well stop to ponder, since the education of the public does not keep pace with the large number of graduates that annually file into the profession. This inequality of supply and demand necessarily brings about a decline in the average fee, telling in its effect upon the moderate circumstances of the majority of the dentists in the United States, any deviation from whose income is more or less embarrassing. We apprehend, also, that most students have well-nigh exhausted their resources during their college course, and in many instances have even borrowed the funds with which to meet the emergency; hence



necessity forces them to realize something at once from their own efforts. Having located in a good town,—one, however, full of dentists, it seeming impossible, in fact, to find a place where the demands were not already fully supplied,—the next point is how to gain a practice. In the average young person's soul there is a responsiveness to ethical training and influences, and in the beginning of his active professional life he desires to align himself with its best interests. If he has moral stamina and worldly foresight, he will realize that honesty, sobriety, and application will surely bring their reward and meet with success by and by. But the temptations to stray from the "path of professional rectitude" are strong and numerous, and the young practitioner who hangs out his sign and ethically waits for a practice that is proverbially slow in materializing, may grow more despondent day by day, until in his extremity he resorts to trade methods, fondly hoping to return to the professional fold later on; or he may accept an alluring offer from some "dental parlor," preferring a fixed salary to manfully facing the expenses and responsibilities of an individual career.

When this deviation in the course of a young man's life is observed, we question whether he is morally sound, or if earlier unethical surroundings are responsible for the propensity, or perhaps the plan on which many college infirmaries are conducted may first appeal to his commercial instinct, and suggest the idea of reducing prices as an inducement to obtain patronage, thus paving the way for this step, which is taken more and more frequently by the recent graduate and accounts largely for the increase and growth of quack establishments. However this may be, the result is the same,—the young manhood of the profession is being dwarfed, and vital capacity for growth as a body is curtailed to the same degree.

And now, to each intelligent practitioner I would propound the question, Is this departure on the part of the young men from the well-beaten paths of our predecessors calculated to undermine a practice built up by years of unceasing toil and labor along ethical lines? No,—if we could but hope that these professional renegades would some day be reclaimed; but, on the contrary, their tendency is usually downward until they voluntarily drop out of professional circles, and reflect upon their alma mater by advertising in a most promiscuous manner.

A peculiar characteristic of the American people is a desire to get the best and most for the least money, and hence they are attracted by the advertising dentist to make investigations, and he, appreciating the situation, readily explains that times have changed, and that just in proportion as work is facilitated by new appliances, is the dentist under obligation to the people to reduce his fees for services rendered.

The ethical man, forgetful that present economic problems are the natural and logical results of industrial activities, and if bravely met and worked out will lay the material foundation for the social development of the profession, ponders in his leisure hours the fact that so many of his patients have been lost to him by virtue of commercial inducements thrown out, and in many in-

stances he grows pessimistic, declaring that the profession is doomed. Under these circumstances, it is easy for him to reconcile to himself the uselessness of either attending dental societies or serving in any capacity that tends toward organization, rather preferring to remain at home and guard his own interests. Just here you may lay your finger upon the heart of apathy in the dental profession, which has actually become a contagion, confining itself to no locality, but prevailing throughout the entire country.

This fact is to be greatly deplored, and an energetic movement in favor of local organization should be inaugurated at once which would not only largely counteract its morbid tendency and overcome the inertia so apparent everywhere, but engender brotherly love and confidence among the professional men of the community, unite them upon some feasible plan to defeat this shopping disposition among the people, and prepare them by contact and systematic study to keep well in advance of the public mind and at the same time devise ways and means for educating it to a higher appreciation of the true mission of dentistry. As a practical illustration of local organizations, consider the efficiency of the ministers' "Monday morning conference," the county medical societies, the various trade and labor unions, to unite their common interests and materially improve their condition. Personally I have seen all these different orders successfully carrying out their plans, and in Alabama the dentist is the only man who is willing to conduct his own affairs without regard to associational helps. Permit me to ask how many cities, to say nothing of the towns, within the limits of this association have local societies? When we consider how small is the percentage of organized force in the profession, and how heedless we have been with respect to this question, is it any wonder that we suffer from apathy?

We as a profession have kept step with the mechanical activities of the nineteenth century, as is witnessed by the elegantly appointed and perfectly equipped modern dental office; but if we would still march in the vanguard of progress, these surroundings must become only the material prototype of the spiritual development of the twentieth century during which the study of man will be more highly esteemed than matter, and the ethical adjustment of his relations, through social and economic organization, of profounder moment than the mechanical adjustment of material means and ends for his gratification and convenience.

Hence the spirit of the times invites us to-day to the undertaking of two great projects, fraught with vital possibilities to the dental profession,—the thorough organization of its forces and the education of the people. And we, assembled here in convention, should not lose this opportunity of bringing forward plans for the dissemination of dental information among the people, for the appreciation of which the public school and other systems are preparing the rising generation; and further, we should become partakers in the development of the associated life of the future by taking direct steps toward local organization: qualified representation from such societies would tend to promote the intelligent growth of this body, and of the National Association.

(To be continued.)

## NEW YORK ODONTOLOGICAL SOCIETY.

(Continued from page 611.)

TUESDAY, JANUARY 21, 1902—*Evening Session.*

THE president, Dr. Hodson, occupied the chair, and called the meeting to order at 8.30 o'clock.

Dr. W. W. WALKER. This meeting being the annual meeting of the Odontological Society, the Executive Committee and the Clinic Committee have arranged that on this occasion the minutes of our last meeting shall be omitted; also the reports of clinics given to-day. Each clinician will write a report of his clinic, and send it to the chairman of the Clinic Committee, who will edit it and it will appear in our proceedings in the COSMOS. That is the usual procedure, and it saves time.

THE PRESIDENT. If there is no objection, the matter will take that course.

Dr. WM. JARVIE. There is a bill before the United States Senate at the present time providing for a corps of dental surgeons in the navy, and I have prepared this resolution in regard to it, which I now offer; and move its adoption.

Dr. Jarvie here read the resolution, as follows:

WHEREAS, There is a bill now in the United States Senate (Bill S. 2519), providing for a Corps of Dental Surgeons in the United States Navy; and

WHEREAS, The New York Odontological Society approves most heartily of the provisions of the bill; therefore be it

*Resolved*, That the senators and representatives representing the state of New York in Congress be urgently requested to use their best efforts to secure the passage of this bill.

The motion was carried.

THE PRESIDENT. The paper of the evening is by Dr. A. W. Harlan, of Chicago, and is entitled "The Basis of Dental Medicine." Dr. Harlan, I am sure, needs no introduction to this audience.

Dr. A. W. HARLAN. Mr. President, and members of the Odontological Society of New York,—Before reading my paper to-night, by request of several members of the society, I will explain to you something about the subject of digesting the pulps of teeth which is not included in the paper.

You may remember that I presented a brief paper to the International Dental Congress at Paris, in 1900, on the subject of digesting dead pulps of teeth. That was not a new subject to me, and perhaps it was not a new subject to most of you, because as early as 1887, Mr. Oakley Coles, an English practitioner, had presented a paper on the subject of digesting pulps by the use of pepsin. A little later, Dr. William Van Antwerp, of Mount Sterling, Kentucky, published a paper on the same subject, in which he stated that he accidentally discovered that a beefsteak which he had wrapped in some pawpaw leaves had become very much digested. My attention was called to that subject through the communication of Dr. Van Antwerp, and from that time to the present I have spent a great many hours in the effort to digest pulps of teeth. I may say to you now, after the lapse of quite a number



of years, that it is not only a feasible proposition, but a practical one, because there is no doubt whatever that the pulp of a tooth can be perfectly digested with a proper papain paste. The papain paste is obtained from the *carica papaya*, which is extracted from the ordinary pawpaw, and is prepared by Merck and other chemists. You can convert this into a paste, which loses none of its digestive properties. The original formula that I presented was composed of

Papain, 1 grain;  
 Price's glycerin (which is free from organic acids) 1 grain;  
 Solution (1 : 300) of hydrochloric acid, 1 grain or 1 minim  
 (the equal in weight).

This is commingled to make it a perfect paste.

If the rubber dam is in position and the tooth dry, and the pulp be already dead by arsenic or cobalt, you can wash the cavity with a dilute solution of hydrochloric acid, 1:200, and then fill the pulp-chamber with this paste and seal it into the cavity with gutta-percha or zinc oxyphosphate, and if you leave it for three or four weeks, that pulp will become perfectly liquefied. As my friend Dr. Perry, who was formerly president of this society and is well known to all of you, has said, the difficulty of the removal of the pulp from a tooth,—not a single-rooted tooth, but a multiple- or other rooted tooth, with a small opening,—is one of the curses of dentistry; as Dr. Carr has said, it is one of the things that gives us more trouble than almost any operation in dental surgery. So, if something can be introduced into a tooth that will absolutely and perfectly liquefy or digest a pulp, we have some basis for dental practice that includes the filling of the root. I only speak of this now to recall your attention to its importance. I do not ask you to digest the pulps of teeth in single-rooted teeth, where you can introduce a broach with one or two barbs, and with a simple twist of the wrist turn it out or pull it away; but in those teeth that are twisted or knarled and the canals flattened, and it is almost impossible to introduce a broach, this is the method, so far as we know at present, that will perfectly and completely liquefy and digest the pulp in a given space of time,—that is, from three to four weeks. I speak of this now, for the reason that some of you may have the idea that it is putrefaction that does this; but it is not. Putrefaction means the presence of a micro-organism that causes a ferment, which may in turn give you trouble at the apex of the root. In the presence of a papain paste, which is composed of papain and glycerin free from organic acids, and a hydrochloric acid solution, no putrefaction is possible.

Dr. A. W. HARLAN, Chicago, Ill., then read the following paper:

#### THE BASIS OF DENTAL MEDICINE.

In reading books on the reasons why medicines are used, or in reading papers on the above subject, I have always felt that many authors failed to make the explanation sufficiently clear to enable the person using remedies or medicines to make a proper

selection for the case where a definite remedy or drug should be used.

I am making the attempt to explain the true basis of dental medicine. If I make this clear to you, the same rules will apply to the basis of general medicine or veterinary medicine: Without a proper understanding of the reason for using drugs or remedies all practice is empirical. For years, since the development of the knowledge of bacteriology and pathology, every teacher and student has been endeavoring to study the causes of morbid conditions, and if his knowledge was sufficiently extended, to apply the remedy.

In order to place before you the results of my study and experiences we will take up for consideration some of the diseases that come within the field of practice of the dental surgeon. These will include inflammation of the mucous membrane of the mouth, pericementitis, alveolar abscess, antral abscess, pyorrhea alveolaris in all its stages, necrosis of maxillary bones, facial neuralgia, osteomyelitis, syphilis of the mouth and other oral affections. If in this paper I can give the basis of the treatment of these and other conditions, I think you will be recompensed for spending this hour. A knowledge of the normal conditions and appearances of the various tissues of the body is a prerequisite for the practice of dental medicine. A smattering of chemistry, or physics, or of bacteriology may deceive your clients, but in cases of danger absolute knowledge is often not enough to save life.

It is absolutely necessary to know accurately the symptoms and natural tendency of the malady which is before you; in fact, anything in therapeutics will be hesitating, mismanaged, incoherent, unless you begin by establishing the treatment on a solid basis, which is an exact knowledge of the morbid affection. The recent advances in medicine are due to the studies made by bacteriologists in studying single diseases and cultivating and isolating the specific germs of such diseases.

The knowledge of serum therapeutics has been gained in this way; from the dawn of vaccination through the efforts of Jenner, step by step, exact medicine has been establishing itself; now, smallpox, diphtheria, typhoid, typhus fever, and other well-known and many times fatal diseases are under the control of the expert scientific mind.

Medicine is a science, by the many kinds of knowledge which it includes as a necessary part; it is an art by its application to the patient. The history of therapeutics during the last few years shows that physiological experimentation decides the value of a remedy. No basis of practice but is more fixed by an accurate knowledge of physiology. All of the elements of success in medicine are based on the mastery of the modern laws of health, of hygiene, of the proper mode of living, of the use of water for drinking, bathing, and its known diluent properties in ridding the system of poisons. Let the empiric beware of the pitfalls engendered by the treatment of symptoms alone. To establish a correct diagnosis at whatever cost is the true basis of all dental, of all medical practice.

The careful examination of the teeth alone may fail to fix the cause of disease or of pain, but the study of reflex morbid phenomena and an intimate knowledge of the reflexes may lead to a happy solution of the causes of the symptoms. A concealed or imprisoned tooth, a buried root, the presence of a piece of metal or other foreign substance passing into the tissues beyond the apex of a root, may be and frequently is the cause of a painful neuralgia. A study of physical diagnosis is absolutely imperative in dental schools if a solid basis for practice is to be established. The nervous system, and its study in health is a *sine qua non* for the establishment of fixed rules in practice.

It is not in a multiplicity of drugs that we are to rely in practice, but rather to their appropriateness in use for remedy, for cure, or the salvation of the patient while nature performs her part.

To establish with care and in a scientific manner the basis of dietetics ought to be one of the most serious occupations of the practitioner. Etiology is as indispensable to therapeutics as is hygiene or the administration of medicines.

*Prevention.*—"Prevention of disease is known as hygiene, and this is founded upon an accurate knowledge of physiology." (Bruce.) A form of preventive treatment is prophylaxis. This is something more than simple hygiene or preservation of health; it recognizes the causes of disease at work, and either avoids them or counteracts them by anticipation.

When hygiene and prophylaxis are powerless or cannot be employed the case comes into the hands of the therapist. We must then look for remedy, for relief or for cure.

*Rational Treatment.*—Treatment is said to be rational when it is suggested by all our chemical, physiological, and pathological knowledge. Such treatment must be successful if our observations are correct. It is founded on great natural laws which are known and understood.

Empiricism and empirical treatment are synonyms, and such treatment is founded on experience only. Sometimes clinical experience alone will place a drug or remedy on a scientific basis by observing the results obtained by using it. A well-known writer has said: "What has clinical therapeutics established permanently and indisputably? Scarcely anything beyond the primary facts that quinia will arrest an intermittent, that 'salts' will purge, and that opium will arrest pain and lull to sleep."

Drugs which increase the activity of any organ or function are said to stimulate it. Those which lessen the activity are said to depress it. Irritation is often applied loosely as a synonym for stimulation, but the two conditions are not identical. The great majority of drugs act through their chemical affinity for certain forms of living matter. They probably form temporary combinations with some forms of protoplasm and alter the function of all cells which contain these forms. (Cushny.)

Pathology deals with a knowledge of the functions of the body in disease, and bacteriology causes us to inquire how germs induce disease.



*How Do Germs Induce Disease?*—They produce by their growth chemical poisons, ptomaines; the absorption of these poisons is followed by the symptoms of the disease, and each specific, pathogenic micro-organism produces its own characteristic poison. In infectious diseases the chemical poison is really formed within the body, but the active agent,—the germ,—causing the formation of the poison is introduced from without. It is therefore proper to speak of these diseases as having their origin outside the body. Their spread is to be arrested by the destruction of the germ, by isolation and disinfection. (Vaughan.)

In trying to fix a basis for practice it must be remembered that living protoplasm is always slightly alkaline, and it is invariably destroyed if sufficient acid be added to it or be placed in contact with it.

Any drug which can coagulate albumin will, if applied in sufficient quantity, destroy any living organism, because it renders the conditions of its life no longer possible. On the other hand the absorption of watery liquids or of substances dissolved in water occurs very slowly, if at all, from the unbroken skin, but there is no doubt whatever that absorption of fatty substances or substances that will mix with fat does take place. Example: the rapid absorption of lanolin or wool fat; again, if, when the sebaceous glands pour out their oily secretion, powdered potassium iodid or some equally sensitive substance is brought in contact with the skin, the characteristic iodine reaction will be found in the urine in a short period, proving conclusively that it requires oleaginous solution of drugs to enter the unbroken skin. It is to questions like the above that I desire to draw your attention for a comprehension of the basis of dental medicine.

That drugs have from time immemorial been misused, or wrongly used, needs no argument. I will give you a single instance. We will take as an example of the general misuse of drugs the application of creasote and iodine in the treatment of necrosis of bones. Creasote has no effect on the substance of a bone, or osseous formation, its sole action being to inhibit the growth of micro-organisms. This comes about through its sparing solubility in water. It is a feeble coagulator of albumin, and by its slow action in taking up water it is useful as a preservative of fence-posts and telegraph poles. Iodine is likewise sparingly soluble in water; one part is dissolved in 67,000 parts of water. Of what value, therefore, as a solvent or disintegrator of necrosed bone? You can see the absurdity of the use of such a combination except for its action on living soft tissues. As soon as iodine or some one of its various combinations (iodol, iodoform, aristol, nosophen, europen, soziodol, etc.) is brought in contact with blood-serum its action is a resolvent and disinfectant, but it is never useful for the purpose of detaching sequestra from living bone.

Iodine in its nascent state is a germ-destroyer and disinfectant. It is far better to use for necrosis of bone an acid solution which is the logical solvent (hydrochloric, acetic, trichloroacetic, sulfuric,

chromic, lactic, or other acid) than any neutral or alkaline combination.

We desire to destroy weakened protoplasm, and the saprophytic germ which attacks dead matter, and the pathogenic germ which attacks living matter and even after it is dead continues to attack; these are the enemies to health, and the true basis of medicine is to destroy the agents concerned in setting up morbid processes and proliferating the poisons, so that normal physiological action may supervene.

There can be no more interesting study than the one which concerns itself with the removal of disease and disease-producers. If we assume for the moment that what is known as pyorrhea alveolaris is a disease of local origin brought about through a break in the continuity of the festoon of the gum, from any cause proliferated and propagated by a micro-organism, what must be the basis of practice in arresting the disease? Is it not idle to use spring water, or pyrozone, or a soda solution to destroy the mass of micro-organisms and their spores found in pouches or pockets alongside the root of a tooth? Why not follow a system of rational medicine and use an acid which is not alone destructive to enfeebled protoplasm, but is also a sure and certain destroyer of the pathogenic organism? Acids overwhelm, starve, and destroy the germs of disease and the subjacent diseased tissue so that nature will have a chance to reassert her functions.

The basis of dental medicine in all diseases of the mucous membrane may lie in the fact that, as the natural secretion is faintly alkaline and saline, we must so shock the enfeebled cell layers by the use of acid-destroyers that when they are spent, dead, and removed, the natural function becomes re-established.

In a pericementitis, which is an ordinary disease, if induced by traumatism, rest is absolutely necessary for quick recovery. If by poison (ptomaines), the removal of the producer of the poison by the use of a knife, by gentle heat (up to 140° F.), and perhaps by counter-irritation. When a counter-irritation is practiced it were useless to do it half-heartedly; among others I use for counter-irritation iodine paint, which is composed of

Resublimed iodine,  $\frac{1}{2}$  ounce;  
Potassium iodide,  $\frac{1}{2}$  ounce;  
Fleming's tincture of aconite root,  $\frac{1}{4}$  ounce;  
Alcohol, 1 ounce;  
Chloroform, 1 ounce. M.

To produce perfect counter-irritation dry the gum thoroughly and paint it three or four coats. This paint will act rapidly and certainly. A few doses of gelsemium sulfate,—1-60 of a grain every half hour,—will so quickly relieve pain that the patient forgets in a few hours that he ever had it. The combined action of the local and the internal treatment is resolvent, alterative, and sedative.

All efforts to cure by the aid of drugs the sluggish abscesses around the roots of teeth, alveolar or peridental, should be based upon the action, first, of agents known to be destroyers of tissue

in a strength not so great that needless destruction of sound tissue should take place, but in such a manner that all dead and dying tissue will be destroyed, including the pus-producing organisms; second, the use of such drugs or remedies as will cleanse and disinfect the pouch or fistula until healing takes place. The true basis of practice is to use acids or corrosive agents first, and neutral or alkaline agents second, for disinfection.

Drugs to be useful in the treatment of diseases in the antrum of Highmore (when not malignant) should be selected on the same basis as those that are used in the treatment of a mucous membrane in any other portion of the body. The true basis is destruction of the producers of putrefaction, the removal of irritating agents, and protection of the surfaces of this cavity by agents not destructive to living protoplasm.

The neuralgias are treated by removal of the causes of the pain, not by treating the symptoms. If the patient be anemic, he is fed with proper food and with tonics, tissue-builders. If the pain be due to an injury, protection is needed for the injured part, not the reckless removal of a tooth or teeth.

I insist upon the complete and thorough examination of the case, and if necessary, pending this examination, the administering of drugs that soothe or stupely; while they are acting, search for the cause, and if found remove it. This is the true basis of practice, be it surgical or medical. In the syphilitic necrosis of bones the basis for practice may be said to rest on the known effects of potassium iodid administered internally. The use of washes and lotions and ointments, and attempts to cure by local means are futile. Any syphilographer will tell you that local cleanliness and local disinfection will tend to make the patient comfortable, but to attempt a cure or promise it by such means is impossible.

The time has not come for a complete explanation of all the therapeutic effects of medicinal agents by their proved physiological properties. Still, we believe that the time is not far distant when all pathogenic and other organisms will be thoroughly known, and the full and true basis of dental medicine will be clearly understood and practiced.

In closing this paper I must acknowledge my indebtedness to the works of Bruce, Brunton, Farquharson, Vaughan, McFarland, Wood, Garrod, Ott, Du Jardin Beaumetz, Allen, Murrell, Cushny, Luff, Bartholow, Bowhill, Ferrand, Trouseau, Ricord, Sternberg and Magnin, Miller, Park, and last but not least, Torald Sollman, for the elements of this paper, which has grown into its present length from a faithful perusal of the work and teachings of these master minds, in an age when there are so many giant intellects in other fields.

### *Discussion.*

Dr. WM. JARVIE, Brooklyn. Mr. President and gentlemen,—I do not feel at all competent to discuss this paper, and I had not for a moment thought of being called upon. I have listened very attentively to it and am delighted with it. It is a paper that



every one of us ought to have for reference. I have not read anything on the subject that seems to cover the ground as this does, and it is presented in a most concise and compact form. The lesson that I received from it, as I followed the reader, was the desirability,—the necessity, in fact,—of so studying that we shall have a thorough knowledge of the diseases of the mouth and adjacent parts with which we have to deal, and have also a thorough knowledge of the therapeutic properties of the remedies we employ, so that we may know what remedy to use in any disease that may be presented to us; then we can treat diseased conditions of the mouth intelligently, and it is only by following these lines of study, both as to diseases and remedies, that we can do so.

It has been my privilege for some years to examine those desiring to enter the practice of dentistry in this state on materia medica and therapeutics, and especially have I been interested in the examination of those who apply for a license who have been in practice elsewhere for at least six years. The examinations of these latter are oral and entirely of a practical character, and in the great majority of cases I am dreadfully disappointed to find how little those who come before me know as to the therapeutic properties of the various medicines they employ. Generally they have only an empirical knowledge. For instance, they know that carbolic acid or the essential oils will stop toothache from an exposed pulp, and that aconite is valuable applied in cases of inflammation, but of the properties these remedies possess to make them useful in these classes of cases they know nothing. In such cases I impress upon them the same thing the essayist has impressed upon us to-night,—the necessity of understanding the therapeutic properties of everything we use. Then we know in a given case what to select, because of its certain properties, those being properties we wish to employ.

THE PRESIDENT. May we hear from Dr. Hinkins, of Chicago?

DR. J. E. HINKINS, Chicago. It seems a little out of place to call on me here, because my worthy friend and I have crossed swords so many times at home, that I feel somewhat loath to get up and antagonize him,—were I in a condition whereby I could do so. While I have enjoyed his paper to the fullest extent, and realize the hard and conscientious work which he has done to prepare such a paper, based on physiological facts and practical observation, the point in his paper which impressed me most was the one where he spoke of what had been added to science by clinical observation. I think if I am not mistaken that the author he referred to was no less a light than Professor Wood, of Philadelphia, where he remarks in his work that quinia will reduce intermittent fever, that salts will purge, and that opium will lull pain. I have not been as good a student of materia medica and therapeutics as I would like to have been; but when we come to look back over past fields, and see that those are about the only facts that have been added to the science of medicine by clinical observation, it remains for us to see that physiological experimentation has put medical and dental sciences where they are. If

the proper diagnosis is made, with intelligent application of *materia medica* and therapeutics we may hope to obtain results that will be beneficial to our patients and to ourselves. I do not feel competent to discuss the paper any further. I thank you.

The PRESIDENT. May we hear from Dr. Croll, of London?

Dr. CROLL. I am delighted with this paper and the discussions; but I have come here to learn and be instructed, and beg to be excused from the discussion.

Dr. JOS. HEAD, Philadelphia. I have been very much interested in the valuable paper given to us by Dr. Harlan, and while we must bear in mind the most important points which he raised,—first, care in diagnosis; second, removal of the cause; and third, a proper hygienic condition,—when he came to speak of the fact that we must have absolute knowledge concerning drugs, I must say I hesitated to accept it. Of course, it would be a fine thing if we could have absolute knowledge concerning drugs. It would be a fine thing to have the angel Gabriel come down and give us points about the law of heaven, but one is about as far off as the other. We have certain well-defined knowledge of drugs. Take the drug aconite,—it is one of the simplest in therapeutics. It is supposed in its simplest form to retard the circulation. As far as we know it does not have any other positive effect on the body that we can trace, and yet he would be a very rash man who stated that it had no other action than to retard the action of the heart. The same way with other medicines.

Let us remember that the side action of a drug may be very harmful, although the predominant action may be very good. A drug is like a policeman who rushes in to catch a thief. He smashes all the furniture, tears down the wall-paper, and breaks things up generally, and sometimes catches the thief, and sometimes does not. I am not going to say that quinia will not cure malaria or that it will not act upon the germs that cause chills and fever. But, while those drugs are destroying the germs, Heaven knows what else they are doing in the body! We know perfectly well that certain medicines can be taken by certain persons with impunity,—as quinin before mentioned. I can take ten or fifteen grains of it perfectly well, therefore quinin is a good thing for me, and I can take it to break up a cold with safety; but for some people it would be very bad indeed and would almost set them crazy.

While I think care in surgical operations and in hygiene is necessary, I think we should also be very careful when we give a drug to be certain that while it is doing good it may not do so much harm as to render its so-called virtue valueless.

Dr. A. R. STARR, New York. I am somewhat unfortunate in not having had the pleasure of listening to all of Dr. Harlan's paper, but I heard enough to be favorably impressed by it. I recognize the importance of this subject, as we all do. It is a well-known fact that the discovery of certain drugs and their effects revolutionized the practice of general medicine and general surgery. The discovery of anesthesia, for instance, and the discovery

of germicides and antiseptics, have had a marked effect on general surgery and medicine, and also upon dentistry. Most of us are not as well informed as we should be about drugs. We know the effects they produce, but in many cases we do not know how those effects are produced.

I do not think I have anything of interest to say in regard to the paper, except on one or two little points. Dr. Harlan mentioned the fact that creasote has very little coagulating effect on albumin. In the little experience I have had, I have found that it is almost as coagulating as carbolic acid. In regard to the use of the acids in the treatment of diseases such as pyorrhea, I believe that the good effects of these remedies are principally due to their germicidal influence, and also to their stimulating properties. In regard to their influence in dissolving deposits, I think that is very slight. I am sorry I did not hear more of the paper, so that I might have been able to talk more intelligently on the subject.

Dr. JNO. I. HART, New York. The paper of the evening, emanating as it did from Dr. Harlan, would have surprised us had it not been succinct and clear, and had it not contained some excellent ideas for us to digest at our leisure. Surely the present basis of dental medicine is the thorough understanding of the diseases which we are about to treat, and a complete knowledge, so far as possible, of the physiological and toxic action of the drugs we use; yet even with this knowledge I think that the multiplication of drugs has been rather confusing to us, and I think that confusion has been largely brought about by the different methods of different men. I think that care in our treatment of disease is more often the cause of success than the medicaments which we make use of to aid us in that treatment. When I consider the advance in the scientific treatment of the present day, I cannot help but have an added respect for those who have preceded us, and who, with limited knowledge,—only an empirical knowledge of the drugs they made use of,—achieved the success that they did. Some of those drugs to-day are absolutely useful in our practice, and even though the former knowledge was based largely on empiricism, I think without some of those medicaments we would be at a great loss.

Dr. S. G. PERRY, New York. I look upon this paper as a model. I consider it a model for all times, and there are many reasons why it may be taken as such. Back of it lies much exhaustive, comprehensive, catholic reading. It is also the result of long and careful scientific observation, and then it is done in a manner significant of the man who has a level head,—good, old-fashioned, plain, common sense,—a man who can see things as they are, not as they seem; and if there are any young men here who want some day to be great, I advise them to take this as a model. I am sorry some of the leading men in medicine and surgery did not hear it. I was particularly pleased with the allusions to bacteriology,—the influence of micro-organisms. That, as most of you know, has been my hobby for years. It



seems to me that within the range within which such agents are operative or effective, there is great hope in the recognition of bacteriology. It is possible to cure diseases which are dependent upon such an origin, and there is something very hopeful in taking that view in diseases of the mouth. There has been in the past very much vagueness in the use of medicines for the treatment of such diseases. There cannot be such vagueness in the use of medicines for destroying germs. We had to-day in the clinic a very good example, I think, in the case shown by Dr. Good, where he removed the tartar to the extremity of the roots. He used acids in such a manner as to help the instrument in cleaning the teeth, and then gave nature a chance, and you saw the result. You saw what might be expected, but what has not often been seen here,—a solid, firm condition, which one might get from the implantation of the teeth. Those teeth are not loose at all; they seem to be ankylosed. There seems to be a formation of bony substance about them, that I think will last, and I do not believe there will be any absorption near the end of the root, which is generally the case in implanting. It seems to me that the result of this paper must be very encouraging for us, because we can begin to see daylight in the matter of the treatment of the diseases of the teeth which are dependent on micro-organisms, and I look for a hopeful future in the treatment of these cases.

THE PRESIDENT. Will Dr. Kingsley say something on the subject?

Dr. N. W. KINGSLEY, New York. Dr. Perry and Dr. Harlan have anticipated me to such an extent that I can add but little. All my life I have been to some extent a skeptic in medicine,—not certain of results, not at all certain of the effect of drugs, because they seem to be so varied. I have sometimes applied them much as the man did who was seen apparently getting ready to shoot. Somebody asked him what he was aiming at. He said, "Well, I am going to try to kill a deer, if it is a deer, but miss it if it is a calf."

With the knowledge I had, I have been acting empirically in the use of drugs. I have used them as others used them who claimed certain effects, but I did not always get the same, although I thought I was doing just as others were, and as I did myself in cases where I did get the results. Therefore I became more or less skeptical. Dr. Harlan said we must have an absolute knowledge of drugs, and that is just what I want, although Dr. Head criticized him for the use of that expression. When we have that absolute knowledge, we shall not be acting empirically. Dr. Harlan's paper is one of the most concise presentations of a subject that I have ever listened to. I have heard papers read before this society of three times the length that had not one-tenth as much meat as this one has.

I want to thank Dr. Harlan for the paper, and the Odontological Society for the pleasure of hearing it.

Dr. SHEPARD, Boston. I listened with a great deal of interest and close attention to the paper, and it struck me as being so

concisely expressed that I would not feel competent to discuss it unless I could have an opportunity to read it further. That is the impression it made on my mind. I wish to say that I can see no criticism to make of the paper. I most thoroughly applaud that part of it which laid emphasis upon a very thorough study of what might be called the foundation of all our knowledge in practice,—the minute study of nerve action and reaction,—more thorough than is probably taught to-day in any school, and a more thorough study of bacteriology than is taught in any school. I believe in such a reform in our education that the coming man shall be grounded in elementary and fundamental science so thoroughly that he can take up this work and follow it, so that our knowledge of therapeutics shall be complete.

I thank you for calling upon me. I do not feel competent to discuss the question further. I admire the wording and the composition of the paper, and congratulate the author upon presenting so concise and scholarly a production.

Dr. JNO. S. SANGER, Orange, N. J. I have listened with a great deal of pleasure to Dr. Harlan's paper. It is not a paper that calls for extended discussion, but rather one which to my mind marks the beginning of a new epoch in the profession of dentistry. It marks it because it is one of the fingers which point to a higher medical education in the fitness of men to practice any branch of the healing art, and if we propose to enroll ourselves in the ranks of medical men, and be among the leaders in dentistry, then we must take positions on a higher plane than we have in years past. Dr. Harlan, in presenting a paper of this kind, has had somewhat in his mind the idea of stimulating us to this higher ideal, and such a paper is always of value. Its concise nature, its careful preparation, the absence of unnecessary words, all point a text on which we can build, and I believe that personally I shall be benefited in that I shall have a higher ideal because I have had the pleasure of listening to this able paper.

Dr. CHAS. R. BUTLER, Cleveland. Sometimes it is said that men talk because they want to say something; at other times they talk because they have something to say. I want to say, in the first place, that I think Dr. Harlan has talked to us because he had something to say that is really worth hearing. I have known the gentleman for some time and know he has been working along these lines, and I am willing to say that he has given us a high ideal of what is necessary to be scientific users of medicaments. That a thorough knowledge of etiology is necessary goes without saying, if we wish to be capable of using medicaments in pathological conditions. The concise manner in which this subject has been presented is one of the strong features of the whole thing, and I concede that Dr. Harlan has taken a small number of drugs and done with them what the majority of us cannot do; and that is the whole secret of medical practice. There are a great many doctors, but there are few physicians, and those few use but a small number of medicaments, so that they try to put themselves in complete knowledge of their effects. Dr. Head says we should be

careful in using them not to use such as will do more damage or harm in their side action than they do good in their direct effect. He gives us an example, that he can take ten to fifteen grains of quinin and be happy on it, while some others it would set crazy. So it is with many other things. A small amount of opium affects some persons, sending them up into the third heaven,—makes them as happy as they can be, while others are as miserable as possible on a very small amount.

So, gentlemen, it is necessary to have, as Dr. Harlan says, a thorough and complete diagnosis of the cases that come into our hands for treatment, and a good diagnostician has said that to know what the trouble is is to have half the cure. I have found it many times very difficult to ascertain what the real trouble was, and in such cases have been unable to reach the cause and give relief, as I presume Dr. Harlan could have done under the same circumstances.

The PRESIDENT. We would be pleased to hear from Dr. Stockton.

Dr. STOCKTON. I simply rise in response to your call, to express my gratification at hearing this excellent paper. I do not think I ever listened to a paper with such rapt attention as to this, and I shall look forward with great pleasure to its publication that I may read it over. It was said by somebody that what a man knows and does, that he is. That applies to Dr. Harlan to-night. While the doctor was reading the paper, I thought of the old question as to whether dentistry is a profession by itself or a part of medicine, and I remember the fights I used to have with Dr. Kingsley on that subject; but from what Dr. Harlan said to-night we are certainly a part of the great school of medicine.

I only wish to say if we all possessed the same exact knowledge that Dr. Harlan has, we would be something like the old Irishwoman, who visited her friend whom they thought was about to die. They all gathered around the bed, and one said, "What is the matter?" "Well," answered somebody, "this woman is going to die before morning." "How do you know?" "The doctor says so." Just then another old neighbor came in, and said, "Women have been just as sick as she, and got well. Doctors have said people would die, and they have gotten well." Then said the other woman, "Well, I guess the doctor knows what he gave her!"

Dr. DOWSLEY, Boston. I am sorry you called upon me after Dr. Perry, who, in speaking of the paper of Dr. Harlan, termed it a perfect one, which could not be discussed. He meant by that that Dr. Harlan left no loophole for discussion. I speak of this because I remember hearing Dr. Harlan in Boston last year, and the paper he read before one of our societies on pyorrhea alveolaris and its treatment. There was no discussion following, because he did not give us a chance.

There was one point where I am sorry he did not substitute one phrase for another,—where he said "absolute knowledge of the drug." I wish he had said instead, "using drugs intelligently." I think that would have suited better. I have been connected



with the Examining Board of Massachusetts for some years. Dr. Jarvie spoke of his experience with candidates coming before him, and their lack of knowledge in materia medica and therapeutics. I wish to say here, and I say it for the benefit of any of the gentlemen here to-night who are connected with the dental colleges throughout the country, that in our experience the candidates who appear before us for examination, graduates of colleges throughout the country, know less of materia medica and therapeutics than of any other subject; therefore I think it would behoove the gentlemen who are connected with the colleges to take home with them the advice Dr. Harlan has given to-night, and to pay a little more attention and give a little more time to the instruction and lectures on this important subject regarding which we have had the pleasure of hearing such a very interesting paper.

Dr. W. W. WALKER. I think everything necessary has been said upon the subject of materia medica and therapeutics, and the paper has been very thoroughly discussed. As usual, Dr. Harlan places the credit where it belongs. You see he gave all the persons credit for their work in his researches.

I now move that the subject be closed, and that Dr. Harlan be allowed to close the discussion.

Dr. HARLAN. I told Dr. Jarvie or Dr. Carr that this was the twenty-first year I had attended this society, so I am of age. Well, and seriously, if you had only spent the amount of time necessary to study the true basis of dental medicine through the works whose authors I have mentioned to-night, I feel sure that there is not a man here who would not say to himself that there is a true basis of dental medicine. I did not mention the names of all the authors I consulted, because with some of them you may read three or four hundred pages and not find a single thought that is worth transcribing. I want to tell you that I have been a teacher of materia medica and therapeutics in the Chicago College of Dental Surgery since it was founded, and during the past ten years there has been a stenographer who has attended every lecture I have given, and every student in the college has subscribed for those lectures, paying ten cents apiece for them, in order that he could take them home and bind them into a volume. People have said to me: "Are you not afraid the students will steal all your thunder?" and I said: "No, because the next year I do not deliver the same course of lectures."

If there have been any advances made in medicine, or science, or physiology, or chemistry, or physics, or electricity, or anything connected with the teaching of materia medica and therapeutics, it has been my business to find them out, and incorporate them in the next series of lectures; so I have never been afraid that any student who attended my lectures would be able to go to work and publish a book on his own account and steal anything from me. What I gave I gave absolutely without any copyright, or anything of that sort, so if I have ever done anything in therapeutics or dental medicine, I have done it with the idea that my profession was to be benefited by it, and it was no selfish object

that controlled me or animated me in trying to get it to give to them.

Dr. W. W. WALKER. As one of the Executive Committee of this society, I feel it my duty to thank the members of the Odontological Society and all those who are here to-night and were at the clinic this afternoon. I would like to say that these annual meetings of the Odontological Society have grown so vastly within the last few years that it was demonstrated this afternoon that the quarters are inadequate for our clinics, and if we all live until the next anniversary of our society, we promise you we will have a larger room and everything convenient for clinical operations.

I wish also to offer a vote of thanks to the gentlemen who have assisted us to-day: Dr. Schwartz, Dr. Harlan, Dr. Hinkins, and Dr. Good, of Chicago, and Dr. Tinton, the patient whom Dr. Good brought to demonstrate his treatment of pyorrhea alveolaris; also Dr. Griswold, of Denver, Dr. Timme, of Berlin, Dr. Butler, of Cleveland, Dr. Weeks, of Minneapolis, and Dr. Croll, of London.

I have now

“AN INCIDENT OF OFFICE PRACTICE”

to present. It is something entirely new before this society; it may have been presented in other organizations, but never in the Odontological Society. It is this loving cup, which is a testimonial to our old friend, Dr. Harlan. This is not presented to Dr. Harlan for the work he has done for other dental societies,—particularly the Dental Congress in Chicago in 1893, or the International Association, or any local society, or for the very great work he accomplished a year or so ago in Paris at that congress. It is especially for his work in this society. Distance and miles and hours have never counted with him. It has always been his pleasure to give his time to this society, and he is pre-eminently fitted to receive this recognition from us.

A committee was appointed at one of our recent meetings, consisting of Dr. Northrop, Dr. Perry, and Dr. Jarvie, to prepare a testimonial suitable for Dr. Harlan. I, as the retiring president of the society, was to have the pleasure of presenting it to Dr. Harlan. That was the part I was to take in this affair, and I assure you it is a very pleasant one. I have held positions in different organizations, but never a position of which I am so proud as in presenting this cup to-night. The inscription on it reads: “*Presented to A. W. Harlan, M.D., D.D.S., A.M., M.D.S., by the New York Odontological Society, in token of their appreciation of him as a friend, and in recognition of his valuable contributions to dental science. January 21, 1902.*”

Dr. Harlan, we all know, is the epitome of everything that is loyal and true in our profession. Scientific, theoretical, and practical in his branch of our profession, he has no superior and very few equals. In presenting him this cup of admiration, this loving cup, I hope it will prove a cup of lasting happiness to him. When he is tired of the giddy world and is hidden into the unseen Temple, may his children and his children's children, and all his

friends,—who are legion,—looking upon that cup, know that at least he was honored by this society.

In asking Dr. Harlan to accept it, I will say that after this meeting it will be filled to overflowing in the banquet-room adjoining, and all of us will have the pleasure of drinking to the health, long life, and prosperity of Dr. Harlan and his family.

Dr. Harlan, I ask you, sir, to accept that cup from the members of the Odontological Society, through me, in token of our regard.

Dr. HARLAN. Mr. President, and members of the Odontological Society, I thank you.

Adjournment.

## NORTHEASTERN DENTAL ASSOCIATION.

(Continued from page 736.)

### WEDNESDAY—*Evening Session* (continued).

The PRESIDENT. The next paper on the program is entitled "Hammer and Nails." [The address which follows was prefaced by a humorous "pome" having that title.] I have the pleasure of introducing as the essayist Dr. Gustave P. Wiksell, of Boston.

Dr. WIKSELL. I feel quite sorry that this large audience could not have heard the very dignified paper of Dr. Hopkins this afternoon. My paper is, as you will see, in lighter vein. I am not a scientific man and cannot speak technically, but it seems to me that we are taking too small a slice when we speak of individual cases, viewing the thing from the standpoint of generations. You are all quite familiar with the food of those of two or three generations back, and you all know a great many old people who have splendid teeth, much better than those of their children or their children's children. It is quite true, anyway, that modern caries has developed in the past three generations.

We hear the changes constantly rung on the perpetual mutations of our modern civilization,—its inventions and cute contrivances. The cash register, for instance,—by which, as Dooley says, you can tell within eight dollars of how much has been taken in in a day. In some respects, however, the most wonderful things to consider are the oversights and blunders of the past century!

The discovery of the circulation of the blood never has seemed so wonderful to us as the long concealment of that fact.

The fact that ether would make one unconscious by inhalation was known for a generation before it was used in surgery; that no one thought of its most important use is most marvelous to me.

The doctor who would shut up a typhoid patient in a close room without water would be examined to-day as to his sanity,—but is it not wonderful that such was once the practice of some men?

The most wonderful blunder of all time, since man recorded his blunders, is the belief in vaccination. Vaccination claims to protect its subjects against smallpox, but the theory has always had an army of facts opposed to it. From the beginning cases of smallpox have appeared among those who were supposed to be protected by



vaccination, and that in no small number. This was discovered very soon after the introduction of vaccination, and led to an examination of the subject. To select a few examples out of thousands: In Wurtemberg, between 1831 and 1836, out of the 1677 persons attacked by smallpox, 1055, or nearly two-thirds, had been vaccinated. James Farness Marston, F.R.C.S., etc., in Reynolds' System of Medicine, vol. i, article "Smallpox," gives the experience of the London Smallpox Hospital as follows: "The number of cases of smallpox after vaccination has steadily risen from about 5 per cent. at the beginning of the nineteenth century, to 44 per cent. in 1845, 64 per cent. in 1855, 78 per cent. in 1865, 90 per cent. in 1875, and is now (1885) about 96 per cent. of the whole number admitted." The remaining 4 per cent. was composed mainly of waifs and strays of civilization, of infants under one year of age, children of vagabonds, the natural victims of disease, who would succumb if attacked by any disease. It seems to be now claimed that though you die just the same of smallpox after vaccination, you die happy in having done as the doctor told you to.

When our grandfathers had the bellyache they took five cents' worth of Epsom salts. Our fathers in the same case called in a doctor, who treated them for inflammation of the bowels,—\$5.00. We call three of the best surgeons, who open the case and abstract a small bit of tissue,—\$500. The progress is great!

Almost as great a change has been made from the stone-milled wheat flour of our daddies to the patent-process angel-cake flour now in use in almost every house in our country. Let me make the bread of the people, and I care not who makes the pills!

Lightning and thunder as cause and effect are pretty clear to every mind. We see the lightning; in a few seconds we hear the thunder. Without being told, the child sees the connection. The same child can see men with cigarettes constantly in their fingers, and, later, the same men in running for a car, fall down with palpitating heart, gasping for breath, and see no connecting link between their yellow fingers and the heart failure: doesn't hear the thunder.

If you have ever tried to save a cigarette fiend from himself, you know how difficult it is to make him see that the habit has anything to do with his loss of mental power and loss of physical ability to chop the kindling for the morning fire without a fit of coughing.

When I was a boy I got in with a hard gang. I tried to hold up my end, but always got full before the rest were hardly warm; they did not hear the thunder as quickly as I did, and I sort of envied them their capacity. They are all dead to a man,—the lightning struck them!

You all know the big, rosy fellow who drinks eight or ten drinks a day and just feels like a fighting-cock all the time,—health just oozes out of him. You try and save a dead tooth in his mouth; it never gets over being sore, and soon is taken into the steel twist. You miss him some day and hear he has pneumonia. You might as well begin to figure out how much his widow is worth. That is the thunder.

We all have friends who are burning the candle at both ends in

some thoughtless way, and if our hearing is good we can hear the thunder.

In the matter that we are here to consider, "The human tooth," we are quite familiar with the thunder. A thundering lot of broken-down teeth pass each day under our bur and chisel, and when their possessors ask us the cause, do we see the flash of lightning?

I want to read a few statements from the pen of C. N. Johnson, of Chicago, in the *Digest* for August of this year. . . . Not a word does he say about the causes which lead to the changes within the tooth-structure. Not a word as to the power of resistance being wholly controlled from within in the nutrition of the teeth by the diet. The scientific method seems to develop in the mind a respect for microbes out of all proportion to their importance. Constant gazing through a microscope makes a man bug-eyed.

In the government laboratories in Washington, the food experts have recently come to the conclusion that white flour is best because it digests in less time in a test tube with pepsin, and a few persons fed upon white bread did better than others fed upon whole wheat bread. It depresses me when scientific men jump at such conclusions. Five thousand dollars a year are spent in that laboratory on food products, and I like to respect whatever comes from Washington. [Extract read from report of the laboratory.] We are always after a meal of victuals which will stay by us. If you want something that will digest quickly, why, keep right on with mother's milk. It takes months for the human nature to adapt itself to a change of diet. It requires in some individuals over a year before any change from one form of diet to another can be noticed—before the alimentary canal seems to get its balance and learn how to take care of new sort of diet. Then, and not till then, does such a test become of scientific value. Let us study a half-century of dietary experience with whole nations and armies of men before we come to conclusions.

You all have seen more or less of the Swedish servant-girl with teeth like pearls, who comes from the country where they bake twice a year and hang the coarse rye cakes on a pole to be broken off when used. This healthy Swedish girl with teeth like pearls thinks American bread far superior to that from her native oven, and eats it in preference. In about a year she has the toothache, and in about four years her teeth have galloping consumption; this is the thunder, but as it did not come the next minute after the lightning, no one sees the connection.

This is what our good Dr. Johnson, of Chicago, calls "the influence of climate on the teeth." But, if it is our climate, how do we explain that before American-process flour was shipped to Sweden, two generations ago, two dentists were enough for the whole city of Stockholm, whereas now they are as thick as in an American city? My friends, God cannot make a four-year-old colt in four minutes, nor can He make teeth out of starch.

Dr. Oliver Wendell Holmes replied to a student who asked him if medicine would always cure, "Oh, yes, if taken in time; but

often the remedy should be administered at least one hundred years before the birth of the patient." The wisdom of this statement becomes apparent as we study the history of the human teeth.

We find that three generations ago there were few dentists and no need for more. The people lived on simple foods; patent-process flour and baking-powder were unknown; hot bread was seldom eaten. Without knowing it, our ancestors were following the laws of nature in the chemistry of food, which we of a later generation have so frequently violated.

The Creator in building a kernel of wheat formed one of the most perfect miracles of vital chemistry in all His wonderful universe. So nicely balanced are the elements in this little grain that no chemist can suggest a point where it might be improved.

So perfect is the vital nutritive value of wheat that from practice it has been found that whole wheat bread and apples supply every waste of the human tissue. During the past two years I have been using gluten. It is a preparation which has not yet been put on the market. With this I have seen the most wonderful results. Gluten is absolutely clean, contains less than three per cent. of starch and sugar, and one pound of it will put color into the ears and cheeks of that anemic girl. This may be doubted, but it is true. I have not seen a case of anemia in the past two years in which I have not gotten good results from the use of gluten. It corrects faulty metabolism and furnishes nutrition.

What, think you, must go on in the delicate jellies of the nerves, and in the marrow of the bones, and in the bones themselves, when the hardest substance in the human economy,—the teeth,—is torn down and melted like snow in the sun?

Starvation sits at loaded tables. In the midst of abundance we have the young breaking down at their studies; business men fall out of the race; mothers grow pale and weak from no visible cause; the dentist and the doctor work night and day to repair the breaking, crumbling, suffering army of starving people.

Not overwork but malnutrition is the cause; that and the coffee and tea habits with which the majority brace up their hungry and rebelling nerves. I do not want to weary you, but here is an essay on "Bread." It is a good thing that it was a small edition!—it is good for us. I really believe that if this book had been in the hands of each one of us, our work would have been somewhat unnecessary.

Abolish flouring mills and you will abolish dentistry and all nerve troubles. Gunpowder is less dangerous in the house than fine flour.

Reform! Use whole wheat bread, shredded wheat, oats and barley, and in one year soft, chalky teeth may be hardened, even at the age of thirty or more years, and in children the change is very quickly marked. This is not theory, but actual practice has shown the result of the change of diet in daily observation.

If space permitted, the writer could give many cases in actual practice in which the most discouraging conditions have presented themselves, and in no case has the change of diet failed to improve the texture of the teeth.



A famous recipe for rabbit stew begins, "First catch your rabbit." So in the case of the teeth, we must first have some teeth before we can care for them. Without food no tooth can be saved by tooth-brush and dental operations alone, so I have hammered out a few thoughts which I consider truths, and nailed a few humbugs.

### *Discussion.*

Dr. BARRETT. Mr. President, it seems too bad that such an intelligent paper should not be carefully considered. How it would have rejoiced the soul of good old Dr. John Allen of blessed memory!—the man who annually read a paper before some society to prove what inverted blessings millers were. That was his standing subject for consideration, and he found that every degenerative condition of the teeth, and in fact that almost every other disturbance that affected the human economy, arose from the fact that the millers bolted flour too finely. Alexander Graham was undoubtedly one of the greatest friends of humanity. His very elaborate and astonishing theories concerning vegetarianism and unbolted flour have been the asylum and sanctuary for every eccentric and extremist and reforming radical from the day in which he wrote his first pronunciamento down to the present time, and have probably saved the infliction upon us of many a crude and undigested theory by the long-haired men and the short-haired women who have found satisfaction and rest as "Grahamites." Hence I believe he was a true benefactor of the human race. Concerning fine flour, from which has been removed that which is essential to the building up of the teeth, it is a question that is open to doubt and distrust. We know this to be a fact, that there is no food which will sustain human life that will not give a surplus of the material out of which bones and teeth are made. Even rice flour, which contains about the lowest proportion of calcic elements, yet possesses a large surplus of the mineral substances. It is charged that carnivorous animals, when bred in captivity, do not receive enough mineral substances in their food to supply elements for the bones and teeth. The strangest thing to me is that it should be indicated by cleft-palate, so common in the young of lions and tigers when bred in captivity. Why should there not be lacking a link in the tail or a bone of the foot? We know that those who are curators of the museums always see that an unusual amount of bones is fed to the animals of the cat kind during gestation, as they know if they do not the animals suffer from constipation and indigestion, and not because of insufficiency of mineral elements. It seems to me that we should take this thing into consideration. It is not sufficient to give exercise merely to the teeth and muscles. I do not think that there is any one kind of food upon which man can possibly subsist which will not give a superabundance of phosphates,—showing that it is not a question of pabulum, but first of digestion, and more of assimilation. It is urged that in former years we did not have decay of the teeth to such an extent as now. The truth of the matter is this: No people has ever lived upon the face of this globe that has not suffered from all the diseases of

the teeth which we know to-day. Not in all cases to the same extent, but the degenerations were the same in essence. I have in my collection teeth that are more than three thousand years old and apparently free from decay, but I have skulls also, the jaws of which show evidences of all the diseases that are rife to-day. They did not have any millers at that time and they used whole grains for food. I cannot think all of the sins of this earth to-day should be laid upon the shoulders of those who grind the flour.

Dr. WIKSELL. I do not want to put all the sins against the physical laws of the present generation on the head of the miller by any means. Experience of the nature that I have mentioned tonight is at least very, very suggestive. Of course, the ancients now and then had a tooth extracted, for I have never seen in any ancient skull a perfect set of teeth, but caries seems to have been very rare, and nothing to compare with what we meet with now, with the lower incisors decaying on their approximal surfaces. Dr. Gerrish can remember when he saw his first case of decay of the lower incisors, but now it is a very common thing to see it. It was a very rare thing not so long ago, and the progress of caries in the present generation has gone forward by leaps and bounds, and it seems to me is all out of proportion with the knowledge and the intelligence which we have to-day, especially the knowledge of vital chemistry. I think we must keep at this one thing until it is settled. We must get into communication with the dentists of foreign countries, even as far as Asia and Africa, and gather the data on this subject. I do not want any of you to go away with the idea that I have meant to lay down dogmatic laws, for I have not meant to do so.

Adjourned until 9 o'clock Thursday morning.

(To be continued.)

---

### NATIONAL ASSOCIATION OF COLORED DENTISTS.

At the second annual meeting of the National Association of Colored Dentists, held at Washington, D. C., July 2, 3, and 4, 1902, the following officers were elected: D. A. Ferguson, Richmond, Va., president; A. J. Gwarthney, Washington, D. C., vice-president; D. W. Onley, Washington, D. C., secretary; Allie M. Waring, Washington, D. C., treasurer. Executive Committee—W. E. Hamilton, Anacostia, D. C.; C. C. Fry, Georgetown, D. C.; R. G. Baker, Baltimore, Md.; C. S. Gray, Washington, D. C.; D. A. Ferguson, Richmond, Va.

The attendance at the meeting was large, and the papers instructive, eliciting much discussion.

The next meeting will be held in Washington, D. C., July 2, 3, and 4, 1903.

---

### HARVARD DENTAL ALUMNI ASSOCIATION.

At the thirty-first annual meeting of the Harvard Dental Alumni Association, held June 23, 1902, the following officers were elected

for the ensuing year: Luther D. Shepard, Boston, president; Charles E. Perkins, Brockton, vice-president; Waldo E. Boardman, Boston, secretary; E. Proctor Holmes, Boston, treasurer. Executive Committee—Waldo E. Boardman, Boston, chairman; William P. Cooke, Boston; Ned A. Stanley, New Bedford. The Council is composed of the officers of the association.

WALDO E. BOARDMAN, *Sec'y.*

### GEORGIA STATE DENTAL SOCIETY.

THE thirty-fourth annual session of the Georgia State Dental Society adjourned after a very successful meeting at Macon, Ga. The following officers were elected for the ensuing year: J. M. Mason, Macon, president; S. D. Rambo, Marietta, first vice-president; J. M. Whitehead, Vienna, second vice-president; H. A. Lowrance, Athens, treasurer; S. H. McKee, Americus, recording secretary; O. H. McDonald, Atlanta, corresponding secretary. Executive Committee—G. S. Tigner, Atlanta, chairman; G. T. Gurr, Waverly Hall; C. Z. McArthur, Fort Valley; C. Whittington, Valdosta; M. N. Mixon, Rome; W. H. Weaver (journal editor), La Grange.

O. H. McDONALD, *Cor. Sec'y.*

### COLORADO STATE DENTAL ASSOCIATION.

At the sixteenth annual meeting of the Colorado State Dental Association, held in the Alta Vista Hotel, Colorado Springs, June 17, 18, and 19, 1902, the following officers were elected for the ensuing year: H. B. Hayden, Colorado Springs, president; E. W. Varley, Pueblo, vice-president; W. A. Brierly, Denver, secretary; Wm. Smedley, Denver, treasurer. The candidates elected for appointment by the Governor on the State Board of Dental Examiners were: W. H. Hall, Denver; H. F. Hoffman, Denver; M. H. Smith, Denver; Theodore Ashley, Canon City; Geo. R. Warner, Grand Junction.

The next meeting will be held in Pueblo, June 16, 17, and 18, 1903.

W. A. BRIERLY, *Sec'y.*

### G. V. BLACK DENTAL CLUB OF ST. PAUL.

THE G. V. Black Dental Club, of St. Paul, held its fifth annual meeting at Austin, Minn., June 20, 1902. The following officers were elected for the coming year: S. Bond, Anaka, Minn., president; J. M. Walls, St. Paul, vice-president; Robert B. Wilson, St. Paul, secretary and treasurer. Board of Censors—A. C. Searl, Owatonna; G. F. Andrews, St. Paul, and A. M. Lewis, Austin.

ROBERT B. WILSON, *Sec'y.*



## DENTAL COLLEGE COMMENCEMENTS.

### WESTERN RESERVE UNIVERSITY, DENTAL DEPARTMENT.

THE commencement exercises of the Dental Department of the Western Reserve University were held in Beckwith Memorial Church, June 12, 1902.

Prof. Louis H. Jones, of Cleveland, delivered the principal address.

President Charles F. Thwing conferred the degree of D.D.S. upon the following graduates:

Wm. R. Brewster.	George H. Irwin.	Thos. G. Patterson.
Geo. L. Carbon.	Richard Kitzsteiner.	Albert C. Plant.
Elmer E. Chambers.	Ralph N. Leonard.	Otto H. Reisser.
Joseph A. Coates.	Walter M. Leonard.	H. B. Rosenwasser.
Ralph E. Davis.	Clinton E. Line.	Ralph E. Sadler.
Lee L. De Arment.	James C. McConkey.	Ira M. Saum.
Alfred L. Duff.	John McKerrall.	William O. Spieth.
John W. Fairbanks.	James S. McLean.	Oscar F. Strong.
Wm. B. Graff, M.D.	Lyman A. Messecar.	Howard O. Wearstler
Herman D. Graham.	Albert W. Nicholson.	Archie L. Wood.
Charles B. Hawn.		

### UNIVERSITY OF MICHIGAN, COLLEGE OF DENTISTRY.

THE fifty-eighth annual commencement exercises of the College of Dentistry of the University of Michigan took place on Thursday, July 17, 1902.

The commencement oration was given by Rev. Washington Gladden, D.D.

The degree of D.D.S. was conferred upon the following graduates:

John F. Allen.	Harold L. Howver.	Andrew G. Smith.
Morris A. Anglim.	Matthew E. Kearney.	Shilon S. Smith.
Clarence C. Bowen.	Wm. C. Kinietz.	Ernest E. Snow.
Russell W. Bunting.	Joseph H. Kirby.	Frank R. Snow.
John O. Butler.	Stanley M. Kirby.	Roy L. Spaulding.
Edward B. Caldwell.	Harry G. Kittell.	William F. Spies.
Ralph A. Calkin.	Arthur B. Lawson.	George A. Stegeman.
Jas. R. Cannan, B.S.	Arthur W. Lewis.	James R. Stewart.
Fred M. Capron.	Carlos J. Light.	Edwin F. Swinehart.
George Chalmers.	Wm. M. Lyle.	C. G. Taylor, B.S.
Chas. J. Colling.	George M. Madden.	Henry W. Tobias.
Walter L. Crego.	Stuart A. Mercer.	F. Vandeburg, Ph.B.
Frank L. Cunningham.	Allan S. Moore.	Vern M. Van Fossen.
Lewis W. Curtis.	Hugh E. Neelands.	Otto C. Vogeli.
Percy L. Day.	Arthur J. Norman.	Marcus L. Ward.
William Dick.	Laura F. Owen.	Louis G. Watkins.
Wm. P. Finlan.	Harry O. Quackenbush.	Charles M. Welch.
Perry L. Fritz.	Fred S. Randles.	Wm. H. Weybright.
Wm. F. Gates.	Shirley A. Randolph.	Jonathan C. Whatley.
Wm. E. Haller.	O. Riemenschneider.	Frank H. Wilkinson.
Chas. A. Hawley.	Eldred G. Robbins.	Frank E. Williams.
Cyrus B. Hayner.	Guy P. Saville.	Albert C. Wilson.
Fred. L. Hermann.	Maurice G. Skinner.	Eric Zincke.

## MILWAUKEE MEDICAL COLLEGE, DENTAL DEPARTMENT.

THE graduating exercises of the Dental Department of the Milwaukee Medical College were held in the Pabst Theater, Milwaukee, on April 14, 1902.

The degree of D.D.S. was conferred upon the following graduates:

Vet Baird.	C. J. Jane.	C. H. Nye.
F. S. Brace.	O. W. Joslin.	W. L. Neubert.
R. O. Busse.	S. Keller	W. C. Neuman.
J. R. Brown.	R. Kestly.	J. A. Olson.
H. E. Briggs.	G. J. Kent.	C. B. Peterson.
S. H. Campbell.	W. W. Lewis.	G. F. Ramsey.
E. M. Carey.	S. T. Leggatt.	C. W. Seehase.
J. B. Collins.	D. D. Logan.	A. P. Stark.
L. L. Frisque.	F. J. Metzger.	J. S. Steensen.
J. G. Gruber.	E. A. Mueller.	T. A. Stemper.
C. E. Gage.	J. F. Mauer.	O. C. Wernecke.
F. C. Gehr.	E. F. Monroe.	M. Welton.
F. C. Henderson.	A. A. Marck.	F. J. Wilson.
E. K. Herig.	W. A. McFarlane.	P. Wollensak.
W. N. Hedback.	H. McBeath.	E. F. Wilde.
Wm. Hopkinson.	H. F. Nicholas.	H. M. Wigginton.

## COLLEGE OF DENTISTRY OF THE UNIVERSITY OF MINNESOTA.

THE commencement exercises of the College of Dentistry of the University of Minnesota were held in the Armory, Minneapolis, June 5, 1902.

Cyrus Northrop, LL.D., president of the university, conferred the degree of D.M.D. upon the following graduates:

Arthur B. Allen.	Julius L. Gunderson.	Harry G. Peregrine.
Dexter S. Bacon.	Carl E. Hickman.	Plymouth O. Peterson.
Wm. F. Bettschen.	Nelson L. Johnson.	Aubrey H. Russell.
Thad S. Beede.	Carl S. Jorgens.	Benjamin A. Sandy.
Ole Bolstad.	Eugene W. Kaliher.	John Schacht.
William A. Caine.	William S. Lindsley.	Wm. Peter Seaquist.
Cyrus J. Carter.	Fred S. Meyer.	J. Floyd Tift.
Charles R. Crandall.	Daniel R. Miller.	Alex. S. Trondson.
Lawrence J. Fish.	Alfred T. Oberg.	Edward W. Turner.
Freeman F. Fletcher.	Walter N. Palmer.	Albin R. Vanstrum.

## NEW YORK DENTAL SCHOOL.

THE commencement exercises of the New York Dental School were held in the Academy of Medicine, New York city, May 5, 1902.

The degree of D.D.S. was conferred upon the following graduates:

Walter N. Beekman.	North Carolina.	Agnes Polhamus.....	California.
William G. Cary.....	New York.	Chas. M. Peters.....	New Jersey.
F. S. David.....	New York.	J. Fred. Paulsen.....	New York.
Esther Fimowich....	Russia.	Martin A. Paulsen.....	New York.
J. L. Kronfeld.....	New York.	Nils S. Sahlen.....	Sweden.
R. Ogeta.....	Japan.	Gerald M. West, A.M....	New York.

## COLLEGE OF PHYSICIANS AND SURGEONS, DENTAL DEPARTMENT.

THE annual commencement exercises of the College of Physicians and Surgeons, Dental Department, were held at the Metropolitan Temple, San Francisco, Cal., on Wednesday evening, June 25, 1902.

The degree of D.D.S. was conferred upon the following graduates:

R. F. McMahon-Allen.	Thomas F. Gordon.	J. Lee Prosser.
C. W. Benedix, Jr.	Walter S. Gray.	George O. Rader.
Paul J. Boyens.	Charles F. Gross.	Will W. Ramsey.
Oscar E. Bronson.	George N. Hein.	William A. Rantz.
Frank T. Brown.	Lloyd B. Hines.	Louis G. Samuels.
H. Stuart-Chandler.	Harry T. Hinman.	H. C. H. Schroeder.
Walter J. Chase.	Ray L. Hursh.	Charles G. Schwarz.
Walter M. Clark.	Julian A. Jackson.	James L. Smith.
Charles S. Coe.	Creed H. Lemon.	Abraham W. Ward.
Floyd C. Doyle.	William H. Levey.	William H. Watkins.
Harry C. Duckett.	Franklin H. Locke.	Paul J. Wilkins.
Du Bois Eaton.	J. W. Lewis.	Percy J. Woolley.
David P. Edwards.	Leo J. A. McMahon.	Mazie Worthington.
Matthew F. Fountain.	Arnold B. Peters.	John S. Wren.
Severino Galeoto.	C. S. Pitt.	L. von Meuseback-Zesch.
William W. Goode.		

## UNIVERSITY OF IOWA, COLLEGE OF DENTISTRY.

THE twentieth annual commencement exercises of the College of Dentistry of the University of Iowa took place at Iowa City, Iowa, on Wednesday, June 11, 1902.

The address to the graduates was delivered by Pres. Booker T. Washington, of Tuskegee, Ala.

The degree of D.D.S. was conferred upon the following graduates:

Henrietta F. Allen....	Pennsylvania.	Cora R. Miner.....	Iowa.
Robert E. Byers.....	Iowa.	Robert C. Morris.....	Iowa.
Harry D. Cook.....	Iowa.	Henry C. Mueller.....	Iowa.
George Cress.....	Iowa.	A. O. von Oven, Jr.....	Iowa.
Caroline Detwiler....	Iowa.	James T. Porter.....	Iowa.
Cleo S. Harris.....	Iowa.	Edward H. Reedy.....	Nebraska.
Vane E. Herbert....	Iowa.	Jay A. Roth.....	Iowa.
Jos. A. Hildebrand...	Iowa.	Hugh Rupp.....	Iowa.
Anna Hopkins.....	Minnesota.	Roy E. Sherer.....	Iowa.
Frank L. Housholder.	Iowa.	Berton A. Small.....	Iowa.
Wm. J. Jeffers.....	Iowa.	Wm. E. Spence.....	Iowa.
Archie D. Johnson....	Iowa.	Edgar C. Stimmel.....	Iowa.
William E. Kain.....	Iowa.	Wilfie A. Suthers.....	Iowa.
LeRoy W. Lewis.....	Iowa.	Guy E. Thode.....	Iowa.
Arthur M. Lingo.....	Iowa.	Roscoe H. Volland.....	Iowa.
Emery C. Lynn.....	Iowa.	Mitchell B. Yeoman.....	Iowa.

## VANDERBILT UNIVERSITY, DEPARTMENT OF DENTISTRY.

THE commencement exercises of the Department of Dentistry of Vanderbilt University were held in the university chapel on May 6, 1902.



The address to the graduates was delivered by Dr. C. N. Johnson.

The degree of D.D.S. was conferred by Chancellor J. H. Kirkland, Ph.D., LL.D., upon the following graduates:

Doak G. Barnett.....	Florida.	Chas. M. Newton.....	Texas.
Wm. J. Cheatham.....	Kentucky.	John L. O'Connell.....	Louisiana.
Geo. N. Clarke, Jr.....	Louisiana.	Geo. L. Powers.....	Tennessee.
Wm. S. Crenshaw.....	Arkansas.	Guy H. Price.....	Mississippi.
Geo. A. Cullom.....	Tennessee.	Ernest W. Sturm.....	Tennessee.
Edward H. Happel.....	Texas.	Jasper B. Thomas.....	Texas.
Harry C. Johnson.....	Tennessee.	Walter T. Townsend....	Mississippi.
Benj. R. King.....	Alabama.	Jesse C. Turrentine.....	Alabama.
R. H. Macy.....	Florida.	Wm. L. Wilcox.....	Illinois.

### TUFTS COLLEGE DENTAL SCHOOL.

At the commencement exercises of Tufts College Dental School, Boston, Mass., the degree of D.D.S. was conferred upon the following graduates:

Edward S. Bennett.....	Massachusetts.	James P. Lockhart..	Massachusetts.
Pliny W. Berks....	Massachusetts.	Alex. S. Macleod....	Massachusetts.
Edward V. Burke..	Massachusetts.	Edward A. Merrill...	Maine.
Joseph H. Bussey..	Massachusetts.	Samuel I. Moody....	Massachusetts.
James W. Cail.....	New Brunswick.	Gerda von B. Perry...	Massachusetts.
Melvin C. Cann....	Nova Scotia.	Stephen D. Perry....	Massachusetts.
Farquhar D. Carter	Massachusetts.	Lewis J. Pierce.....	Massachusetts.
Arthur H. Clark...	Maine.	Sumner W. Pratt....	Maine.
Bertha J. Davis....	Massachusetts.	Mark Romanow....	Massachusetts.
Edward T. Fox....	Massachusetts.	Fred. P. Russell....	Vermont.
Giles C. Grant....	Maine.	Harry P. Small.....	Maine.
Ernest W. Homan..	Massachusetts.	Albert L. Smart....	Massachusetts.
Ivan S. Keith.....	Massachusetts.	G. A. Tewksbury....	Vermont.
Fred E. King.....	New Brunswick.	John P. Thayer.....	Massachusetts.
Ernest F. Lincoln..	Massachusetts.	Charles R. Viles....	Maine.
Maurice E. Locke..	Massachusetts.	Rollin E. Wells.....	Massachusetts.

### EDITORIAL.

#### "THE SAME OLD THING"—ITS CAUSE AND TREATMENT.

A REASONABLE degree of familiarity with dental literature is a necessary part of the equipment of a dental editor regardless of his personal tastes and inclinations;—necessary in order that he may exercise an inhibiting function toward the perpetual repetition of ideas which in the revolution of the wheels of professional progress is constantly manifesting itself. Even the average reader of our periodical literature, the man who feels that his whole duty to himself and his profession, from the literary standpoint, has been accomplished when he has scanned the contents of the several issues of one journal, has been known to complain of the constant recurrence of "the same old thing,"—of the repetition of ideas

which he meets,—and to wonder why it is that so much of the old is rehabilitated or rediscovered and exploited as new, while so little of the genuinely novel is presented for his enlightenment. When the average reader finds cause for such criticism he commands the full sympathy of the editor who by force of circumstances reads not only for pleasure, but for his daily bread, and who necessarily acquires a more extended perspective and sees the difficulty in its broader relations.

The complaint of useless repetition and lack of novelty in much of our periodical literature is well founded. This criticism of the average reader will receive the support of dental editors in general, and not only is it to be deplored, but efforts toward the removal of the difficulty should be systematically made. The main reason why useless repetition of the old ideas and methods is objectionable is because it operates as an obstacle to the more rapid advancement of our professional interests and status, by encumbering our pathway with that which has passed into history and needs no reconsideration excepting in so far as it may be a factor in further development. It is wasteful of energy to recreate again and again old ideas, whether they be merely suggestions or have material application and expression as technical devices. We must build upon the attainments of the past, and not waste our energies in living over again the experiences of our predecessors, else all progress is arrested. No argument would seem to be necessary to enforce the truth of this position, nor are examples required to show that we are constantly negligent of its practical importance, as everyone, even the occasional observer of the character of the intellectual output in our societies and periodical literature, must have noted how often it happens that old ideas, in a dress not infrequently lacking in novelty as well, are presented for consideration.

There is but one class to whom such material can have an interest, viz, those who by virtue of their ignorance of its venerable antiquity learn of it for the first time. In the case of those who periodically meet these old friends the welcome becomes in time less enthusiastic just in proportion as the habiliments of the ubiquitous visitors grow threadbare from repeated public exhibition.

And right here we find the root of the whole difficulty,—in the superficial knowledge possessed by our profession in general regarding the details of its history. And what is meant by history? Not alone its biographical aspect, the records of the struggles and attainments of those worthy individuals who by virtue of strong personalities, energy, and hard work established reputations for

themselves as the makers of dentistry. Far more than that do we need a wider acquaintanceship with the data which have contributed to our scientific and technical development. It is infinitely more important for the progress of our profession that we should know what has been done than that we should know who did it. A knowledge of topical history rather than biographical history is what is needed as a corrective of the tendency to repetition which we have under consideration. There is not an idea in practical use in dentistry to-day that has not been done over time and time again by those who in honest ignorance of the work of their colleagues, have repeated that work more or less to their disappointment, often to their discredit, and always with a useless expenditure of energy which had been more profitably directed toward a study of our professional literature with the view to obtaining correct knowledge of the existing state of the art. If any doubt the general applicability of these conclusions, let him study the history of the discovery of amalgam as a filling material, of the coffer dam, of the introduction of gold by percussive force, of the dental burring engine, of inlays, or in fact any so-called modern operation. Even so radical and modern an invention as the implantation of metallic capsules as supports for artificial crowns was in its main essentials described by Maggiolo, of Nancy, in 1800, and as roundly condemned by Taveau and others of his colleagues as its modern counterpart can ever hope to be. As in dental art, so, and even more so, is it true of the theoretical aspect of our professional work. If any doubt, we refer him to the literature of pyorrhea alveolaris under the multitudinous designations which have severally in the course of time from Celsus to Talbot been called into service to cover what we don't know of that much-misnamed condition.

The remedy is obvious. A more intimate familiarity upon the part of our dental writers with the data of dental history in its topical aspects will tend to eliminate the present excessive tendency to repetition. The study of what has already been done, what is already known, on a given subject is as much a necessity for the intelligent practice of a profession as is training in its elements. Indeed, such training is, after all, but a selected presentation of the more important features,—the essentials, as it were,—of dental history. But no one will admit that study should cease with the termination of the college course; professional success is conditioned largely upon industrious, patient study throughout professional life. What was not obtained in the college course must be sought afterward in our standard and periodical literature and by independent investigation, experimentation, and research.



By what practical means can the literature of dentistry be made generally accessible to its practitioners? It is manifestly impossible to expect all to obtain or to read the whole available output, but what should be done is to systematically promote the collection of dental literature and its disposition in libraries where, under proper restrictions as to safe keeping, the dental profession may have access to it as needed. There are too few dental libraries, and no systematized movement has yet been inaugurated for their creation. Much valuable literature is scattered about in attics and cellars which will eventually be consigned to the flames or converted into paper stock unless collected and permanently preserved.

There should be created a central clearing-house for the reception, classification, and redistribution of these fragmentary collections so that all interested in the building up of dental libraries might have direct access thereto. Such a clearing-house could be readily organized by the National Institute of Dental Pedagogics or the Faculties Association, and the funds necessary for its maintenance and working be obtained through an annual subscription from all who desired to participate in the benefits of the plan. Each subscriber could be required to furnish to the central bureau lists of his wants and his duplicates, and have the right to exchange or purchase upon the basis of the actual cost of the publications involved.

An arrangement of that character would tend to stimulate the formation of dental libraries in connection with colleges and societies and by private individuals, and in the course of time, by making dental literature accessible, tend to throw discredit upon the publication of articles which did not take full cognizance of the work of previous writers in the same line. It would make the excuse of ignorance for what too often comes perilously near plagiarism unpopular, by removing the obstacles to a wider knowledge of dental literature upon the part of our professional writers.

---

## OBITUARY.

### DR. ISAAC JOSIAH WETHERBEE.

DIED, June 26, 1902, at Dorchester, Boston, Mass., of heart failure, in his eighty-fifth year, ISAAC JOSIAH WETHERBEE, D.D.S.

Dr. Wetherbee was born at South Reading, Vt., March 9, 1817. He was the son of the Rev. Josiah and Abigail (Jones) Wetherbee. His father, who was a leading clergyman in the Free Baptist denomination, served with distinction in the War of 1812. He obtained a fair education in the country schools of his neighborhood, and early evinced a marked genius for mechani-

cal pursuits. Arriving at manhood, he studied for the ministry under his father, and was ordained at North Hampton, N. H., June 2, 1841, and at once began preaching. He held pastorates at Kittery, Me., and afterward in Charlestown, Mass., where he resided in 1845.

In 1846, by reason of ill-health, he was obliged to relinquish his profession as minister, and he then turned his attention seriously to dentistry, which he had for some years studied and practiced among his friends in a private way. He further pursued his studies with the limited text-books then extant, and in 1850 graduated from the Baltimore College of Dental Surgery, receiving his degree of D.D.S. in February of that year. Establishing himself in Boston, he early became prominent in his profession.

In 1865 the Boston Dental Institute was organized with seventy members, and he was elected its president. The society held meetings monthly, at which lectures were given on dental science and allied subjects, until it was superseded by a charter for the Boston Dental College, on June 3, 1865, upon the formal organization of which institution, in July following, he was made president, a position which he held (with the exception of four years, from 1869 to 1874 inclusive) until 1899, when the Boston Dental College was merged in the Tufts College Dental School. In addition to his presidency, he occupied for the first fifteen years the chair of dental science and operative dentistry, emeritus.

Dr. Wetherbee was an honorary member of the Massachusetts Dental Society, and one of its organizers. He was also an honorary member of the Vermont Dental Society, and president of the American Dental Association.

He was married February 1, 1872, to Miss Almira Woods, of Arlington, Mass., who, with one daughter and a son, Dr. Irving J. Wetherbee, of Boston, survives him.

---

### DR. RICE R. BUCHANAN.

DIED, June 5, 1902, at Fishkill Landing, New York, of pleuritis, Dr. RICE R. BUCHANAN, of San Juan, Porto Rico, aged fifty-three years.

In February last he contracted a severe cold, resulting in pneumonia, recovery from which left him with an almost total loss of recuperative power. Advised by his physicians that a long rest farther north was essential, he came to New York city early in May, and for a time gained strength, but through a relapse he gradually failed until the early morning of July 5th, when he closed his eyes forever in peaceful sleep.

Dr. Buchanan was a Virginian, born at the Natural Bridge, August 9, 1848. In early life, however, he removed with his parents to Missouri. There he grew to manhood and finished his scholastic education. Having a natural bent in the direction of mechanics, he decided upon the profession of dentistry as his life-work, and after preliminary preparation entered the office of Dr. Geo. Willis, where he remained during the years 1874 to 1876. During the latter year the Black Hills were opened to settlement, and Dr. Buchanan became one of the pioneers of that section, locating at Deadwood City, Dakota, where, until 1883, he conducted a successful and prosperous practice.

But the progressive spirit that ever characterized him yearned for a broader field and higher attainment in his profession; and in 1888 he returned to Missouri, locating in Kansas City, where he entered the Kansas City Dental College, from which he was graduated in 1891, and in which institu-

tion he served for several subsequent years as one of its most valued clinical instructors, meantime establishing a lucrative practice, which was only relinquished through the failing health of his wife. Then, true to his pioneer spirit, he united his fortunes with other Americans in San Juan, Porto Rico, where at the time of his death he had been practicing for three years.

Dr. Buchanan was an intelligent, cultivated gentleman, a genial companion, a true friend; above all, he was "one of God's noblest works, an honest man." Standing always for the right, he was an inspiration to the younger members of his profession, and in his strict observance of ethical deportment he did much to elevate the standard of dentistry in the communities that claimed him as a citizen. Many friends will mourn his untimely death, but will be consoled by the fact that he leaves with them the example of a noble life, through which humanity will profit.

Dr. Buchanan was married in 1887, at Deadwood, Dakota, to Miss Emma C. Pittee, who survives him. He is also survived by six brothers, of whom the eldest, Prof. Jno. T. Buchanan, is an educator of national reputation; one is a practitioner of dentistry, and the others are active business men.

---

## REVIEW OF CURRENT DENTAL LITERATURE.

---

[*Dental Review*, Chicago, June, 1902.]

A RESTATEMENT OF THE PRINCIPLES OF EXTENSION FOR PREVENTION, AND SOME CORRELATED SUBJECTS. BY DR. G. V. BLACK, CHICAGO, ILL.

The author states that he first used the phrase "extension for prevention" in articles published in the *DENTAL COSMOS* in 1891, and that judging from the amount of discussion which this phrase has provoked and the widespread betterment of filling operations, he must conclude that the use of it has been fortunate in expressing the method of filling teeth which he advocates.

The recurrence of caries he sharply divides into two classes: Those due to the faulty manipulation of the filling material or the failure to make fillings completely water-tight, and those cases of recurrence of decay from an actual re-beginning of the carious process. In the first case the decay runs under the filling as far as the adaptation was originally imperfect, whereas in the second case a new decay starts upon the enamel beside the filling, which was in itself perfect. The observation that in approximal cavities recurrence of caries would more frequently occur at the rounded angles of the filling and in labial and buccal cavities at the mesial and distal ends of the filling or at the gingival margin if not overlapped by the free margin of the gum, led the writer to the study and adoption of means to prevent it.

Referring to the definition of "extension for prevention," the author says that by it is meant the operation which consists in including within the outline of the cavity the areas especially susceptible to future decay. This consists essentially in squaring out the bucco-gingival and linguo-gingival angles; smaller approximal cavities are cut to a medium size and similar form in the teeth of those very susceptible to caries, especially in young persons. Gingivally the cavity is prepared so as to be under the gingival margin. The fact is also mentioned that cavities of equal width to the occlusal surface or with parallel buccal and lingual walls facilitate the placing of the



filling material. He refers to a paper read by him before the Illinois State Dental Society, in which he called attention to the anchoring of these fillings in a step cut for the purpose in the occlusal portion of the tooth instead of depending upon grooves or dovetails cut lingually and buccally, and advised the preparation of both the gingival and pulpal walls perfectly flat. The question of "contact point" is then carefully discussed, the author calling attention to the method of cavity preparation of the late Dr. Marshall H. Webb, which he says approached most closely the forms recently advocated.

Dr. Black again calls attention to the so-called soft and hard teeth, stating that for all practical purposes of resisting decay and receiving metal fillings, the teeth are of equal density whether young or old. With reference to the pathology of dental caries, he says that decay attacks teeth only at the areas of susceptibility, which he divides into two classes,—the pit and fissure class, and the smooth-surface class,—to which extension for prevention properly applies. In the first class caries recurs only as the result of imperfect operating, the remedy for it being therefore the adoption of more accurate operative methods. Regarding the areas of susceptibility of the second class, we note the statement that when the carious process is found upon the centers of these surfaces it spreads itself toward the outer margins of the unclean surface, and if the central portion of the area be cut out when decay first appears, it will be only a question of time until decay destroys the remaining portions of the unclean surface which are adjacent to the margins of the filling. After a discussion of the tooth-surfaces rendered immune by proper environment, the author calls attention to the fact that if a central area of decay be filled and the conditions remain similar, recurrence will result, but as the conditions of susceptibility and immunity are continually changing, the tendency to immunity increasing with age, the susceptibility to caries decreases markedly.

The operator should be guided in the practice of extension for prevention by the susceptibility or immunity of the patient to decay, but then we can never be sure the susceptibility will not recur. Speaking of the predisposing causes to caries, the author says that the teeth of one person are as good as those of another, and that susceptibility to caries is a matter of environment. The qualities of secretions he divides into local vitiation of secretions and general conditions of the fluids of the mouth, the one giving rise to local decays from purely local causes, the other to a general disposition to caries of susceptible areas.

In answer to the statement that teeth that had fillings inserted without extension for prevention have been preserved for many years, the statement appears that this is certainly true, but that in most of such cases immunity to the beginning of decay has recurred in good time and saved the case from recurrence. Farther on the author says that he has long ago learned not to trust the stories of fillings apparently poorly made which have protected the teeth for thirty and forty years, for such teeth would have done quite as well with empty cavities. The author then concludes his elaborate communication with the statement that susceptibility and immunity to decay of the teeth are comparatively new topics of discussion in dental literature, and that with more study we may in the future be able to predict continued or permanent immunity with more certainty.

[*Revue de Stomatologie*, Paris, June, 1902.]

#### PREMATURE ERUPTION OF TEETH. BY PROF. ROBERT LACASSE.

The author states that it has not been determined as yet whether the premature eruption of teeth is simply an abnormal phenomenon or the consequence of an inflammatory process. He reports from the service of Professor Broca the case of an infant in whom three teeth erupted upon the right

side of the upper jaw five days after birth. A physician was called in consultation and extracted the canine, and on the same day the two remaining teeth fell out spontaneously. The infant was fed by the mother, but three days after its birth a superficial lymphangitis developed upon the left breast, and on that account the infant had to be fed upon the right breast only. From that moment his health began to decline, and the physician already referred to, who had extracted the canine, was then called into consultation. Shortly after, as the child's health continued to decline, he was brought to Professor Broca's service, where an examination revealed the presence of a tumor under the right side of the upper lip and a fistulous opening upon the alveolar border at the region previously occupied by the canine tooth. A swelling was also present upon the palatal vault, occupying half the anterior portion of the roof of the mouth. This was opened; it did not contain pus, but a large quantity of thick, viscid blood. The infant was not brought back to the clinic, but it had been since learned that its death occurred shortly afterward.

The essayist then gives a description of the teeth, which presented an abnormal appearance, and takes up the question as to whether they represent a premature eruption or the expression of an inflammatory process. The author is inclined to accept the latter view, and states that it could be admitted as an hypothesis that the infant's buccal cavity became infected through the mother's breast, which, as already stated, was the seat of a lymphangitis three days after the infant's birth, and that this was followed by a gingivitis and by a dental folliculitis, which ultimately brought about the eruption of the teeth.

[*Trans. Odontological Society of Great Britain*, February, 1902.]

ON AN ANOMALOUS TUMOR FROM THE ANTRUM. By J.  
BLAND SUTTON.

The writer reports the case of a girl, aged eleven, who was placed under his care for an obvious but painless tumor upon the right side of the maxilla. For two years a swelling of the right cheek had been noticed, but as it caused no pain little notice was given to it until the tumor became so large as to produce great disfigurement. The teeth were correct in number, regular in their relation to each other, and normal in shape. The fact that the tumor had been slowly growing for two years and was absolutely painless negatived any suspicion of malignancy, and supported the conviction, notwithstanding the normal character of the teeth, that the swelling had its origin in some aberration in the dental organs. Surgical interference having been decided upon, the muco-periosteum over the expanded facial plate of the maxilla was raised, the thin bone was cracked away, and the capsule of the tumor exposed; but on attempting to enucleate the mass, it was found to be soft and to break up on manipulation. On this account the operator made use of a blunt scoop with which he removed a mass of soft vascular tissue, containing a large quantity of irregular pieces of bone. When the cavity was thoroughly evacuated, a delicate osseous shell represented the expanded walls of the antrum. From a careful count of the pieces of bone removed from the tumor, it was found that they numbered over five hundred. Sections prepared from these irregular-shaped bodies show them to be formed of true bone, and exhibiting the loose and open texture of the osseous tissue forming the alveolar margin of the jaw. The author is of the opinion that the tumor arose in a tooth-follicle, and that the numerous osseous particles are the result of sporadic ossification of the fibrous tissue of the follicle, and that this tumor is an example of what the author terms "compound follicular odontome."

[*Trans. Odontological Society of Great Britain*, April, 1902.]

**PYORRHEA ALVEOLARIS.** BY KENNETH W. GOADBY.

The author presents before the Odontological Society of Great Britain some of the results of his investigations on pyorrhea alveolaris, in the form of a progress report. He mentions the researches of Pedley, Sutton, Arkövy, Galippe, Malassez; agrees with Miller's opinions regarding the predisposition to mouth-suppurations associated with certain general conditions; and says that, in the condition of the gum margin under consideration, it must not be forgotten that many of the predisposing factors often mentioned in connection with the process are not only associated with inflammatory conditions of the mucous membrane of the mouth, but that they also predispose in a purely mechanical way, in that during illness attention to the mouth is often thought to be of such minor importance that the care of the teeth and mucous membrane is entirely neglected. The writer has noticed that the inflammatory condition of the buccal mucous membrane, which accompanies the various fevers, and included with them influenza, is often followed by chronic gingivitis, which later on develops into typical pyorrhea. He mentions the general disorders the sequelæ of which may be manifested in the form of pyorrhea alveolaris, and quotes Hunter's investigations on the association of septic conditions of the mouth with septic gastritis and certain general disorders apparently of a toxic nature, and also on the near relation of these septic mouth-conditions with chronic inflammations of the tonsils. Mr. Goadby describes a case which he has observed, and which confirms this point. Regarding the distribution of pyorrhea alveolaris, the essayist says that it is not confined to the civilized races exclusively, but that it occurs in many native races. It is also stated that it occurs epidemically, this having been the case, according to Mr. Goadby, with the American troops in the late war in Cuba.

The author describes the general course of the disease, reports upon his microscopical studies of pus from pyorrheal pockets, and, after quoting some of the prominent investigators, summarizes his investigations as follows: It appears highly improbable that the ordinary pus organisms, such as the staphylococcus, the bacillus pyocyaneus, the bacillus coli, etc., have any direct share in the production of pyorrhea alveolaris. The occurrence of members of the blastomycetes in both the pus and in the tissues surrounding the roots of pyorrheal teeth is instructive, and certainly merits further investigation. The micro-organisms concerned in the process are pathogenic for animals, when injected from the gum margin. The relation of pyorrhea to general toxic conditions and septic gastritis, as pointed out by Hunter, receives confirmation.

[*Trans. Odontological Society of Great Britain*, March, 1902.]

**ALVEOLAR ABSCESS PERFORATING THE PALATE.** BY MR. ERNEST B. DOWSETT.

The author describes the case of a patient in whom the upper left lateral was fractured as the result of a blow. This gave rise to an alveolar abscess, which resulted, as is often the case with abscesses on these teeth, in the formation of a swelling on the hard palate, which at last pointed and discharged much pus. It remained open and continued to discharge for some months, and it was this discharge that brought the patient to the hospital for treatment. The examination revealed a deep depression in the palate about a third of an inch in diameter, with bare bone at its base. This piece of bone was dead and loose, and easily came away, leaving a perforation through the palate. The essayist intended to cover the palate by means of an ordinary plate so as to occlude the perforation, but, as occasionally happens with hospital patients, she disappeared and has not been heard from since.



[*Ungarische Stomatologische Zeitschrift*, Budapest, May, 1902.]

# THE ACCIDENTAL OPENING OF THE HEALTHY ANTRUM IN EXTRACTIONS. BY DR. JOSEF SZABÓ.

The author says that at the present time there can be hardly any doubt regarding the fact that a certain percentage of antral diseases can be traced to disorders of the teeth. He mentions the most common diseases which may be the source of inflammatory disturbances in this cavity, and gives the rationale of antrum infection following a chronic alveolar abscess. The way in which an alveolar periostitis may bring about inflammation of the antral cavity is also referred to, as well as the fact that besides the foregoing pathological conditions the antrum may be accidentally opened in extracting certain teeth. He discusses the relation of the roots of certain teeth to the antrum, and after quoting the investigations of Talbot, Fletcher, and Weisse upon this subject, states that only seldom is the accidental opening of the antrum followed by inflammatory disturbances, on account of the obliteration of the opening by the coagulation of the blood, which acts as a barrier to the ingress of infective material.

There are probably many cases where the antrum has been accidentally opened without any perceptible effects owing to the closing of the opening in the manner that has just been described. But the opposite is the case if, in extracting, teeth or roots are pushed into the antrum. In such cases epistaxis indicates that the antrum has been opened and that the mucous membrane has been torn apart, but bleeding from the nose is not always present, as the communication with the nasal cavity may become obliterated. The author also refers to a change in the patient's voice, saying that this and also the epistaxis are diagnostic signs of fracture of the antrum during extraction.

He then states that inflammation of the pericementum covering roots projecting into the antrum is followed by a consolidation of these roots with the antral floor, and that in attempting to extract these teeth the antrum is fractured. He mentions a case in his practice in which the extraction of a third molar caused the floor of the antrum to be fractured.

The next point discussed is one of much importance, for the author recommends for the treatment of these accidental openings of the antrum the abandonment of methods at present in vogue, especially those that have been recommended by Weisse and Körner. Dr. Szabó says that it is altogether unnecessary to treat antral cavities that have been accidentally opened, for the reason that soon after the extraction the blood from the alveoli becomes coagulated and closes up the opening. The author concludes his paper with the remark, however, that should the opening be too large, some means must be employed to close it.

[*Archives de Stomatologie*, Paris, April, 1902.]

# QUININ AS AN ANTISEPTIC AND HEMOSTATIC. BY DR. MARX.

According to the experiments carried on by Dr. Marx and published in the *Semaine médicale*, quinin possesses antiseptic and hemostatic properties that could be used to advantage in surgery. If microscopical examination be made of a drop of blood to which a drop of a solution of one grain of quinin hydrochlorid in three grains of rectified alcohol and one hundred grains of distilled water has been added, it will be seen that the red blood corpuscles agglutinate. He advises the use of quinin in one to two per cent. solutions and the application of a compress saturated with this solution to arrest hemorrhages.

The author concludes with the statement that no unfavorable effects follow the use of quinin solutions.

[Paper written at the request of the Dental Section of the Association of Sanitary Practitioners of the City and Province of Naples.]

## ON THE EXTENT AND EXIGENCIES OF DENTAL INSTRUCTION.

By DR. VINCENZO GUERINI, CHIETI, ITALY.

The purpose of this paper was to give the Minister of Public Instruction accurate information as to the status of dental education in Italy, so as to promote the establishment of special dental schools and the abrogation of the law by which a diploma in medicine and surgery is obligatory before the practice of dentistry can be entered upon.

The author discusses the question whether dentists have the right to exist as a separate class, and whether it would not be better were they to disappear gradually and be substituted by a class of medical specialists similar to the oculists, aurists, laryngologists, dermatologists, etc.

Dental diseases, the writer asserts, differ considerably from those of all other parts of the body, both because of their frequency and because they demand therapeutic treatment of a very peculiar nature. If dental maladies are so frequent, the existence of a large number of specialists for their treatment is a paramount necessity, and as sound teeth contribute to the health of the individual, dental laws should not create obstacles to the production of numerous and competent dentists. Prosthesis demands that the dentist possess a very high degree of manual skill, and it is impossible to become a skillful dentist without devoting a very long time to the study of mechanical dentistry and clinical prosthesis. If we take into consideration that even the filling of a tooth is a prosthetic operation, and that not only dental prosthesis properly speaking, but also dento-facial orthopedia, maxillary prosthesis, immediate and mediate palatal and velo-palatal prosthesis, and even nasal and facial prosthetic restorations, come within the field of the dentist's professional activity, it is easy to understand that prosthetic interventions form the principal and most characteristic part of the dentist's work, and that a large amount of general medical knowledge is not a sufficient requirement for the dentist to possess; for above all he must be a skillful artist. The substitution of the dentist by a medical specialist would necessarily result in lowering the standard of the dentist's manual dexterity. Another pernicious and inevitable effect of such a law would be the diminution in the number of competent dental specialists,—for, in order to become a competent physician and dentist, from eight to ten years of constant study would be required.

With this law, the essayist states, it would be as difficult to become a good dentist as it is to become a good oculist, dermatologist, etc. If the number of good oculists, aurists, laryngologists, is limited, it is not detrimental to the masses, because the actual number of these specialists suffices for the wants of the population; a great scarcity of good dentists, on the contrary, would give rise to serious consequences on account of the frequency of dental diseases. The fees would become high and only the wealthy individuals of a community could have their teeth attended to. On the other hand, it would inevitably happen that a great number of medical men, and especially those who had failed as general practitioners,—which is as much as to say the most inept,—would enter the practice of dentistry without any previous competent preparation; for, as the number of competent dentists would be very limited, these unqualified men would probably do a flourishing business even if their professional capacity were not much above that of the tooth-pullers of olden times, who often, as everyone knows, reaped large profits notwithstanding their inability to properly treat dental diseases. If we consider the great importance of the teeth and of their rational treatment in relation to the health of the entire organism, and if on the other hand we consider that each of the pseudo-specialists might be in the course of his professional career the cause of more or less serious injury to hundreds or thousands of

individuals, it is not difficult to convince ourselves that the virtual suppression of dentists would give rise to a state of things so deplorable as to constitute a real social calamity.

From the foregoing statements by Dr. Guerini, it can be seen that in the preparation of this paper his purpose in view has been to show the importance of preserving the autonomy of the dental profession in Italy. In addition, he deals with the necessity of extending the curricula of dental schools so that they should comprise all the general branches of the medical course, but as it is absolutely indispensable that a dental student should receive thoroughly efficient technical instruction, it follows, as he acknowledges, that there is no way of bringing about these changes unless the number of years devoted to the study of dentistry be increased.

Regarding the theoretical branches which the dental student should take up, Dr. Guerini judiciously discusses the uselessness of the dental student's taking up the study of subjects which have no direct bearing upon the practice of dentistry. It is argued that the courses should be given by dentists and should comprise only those parts which would help them to practice their profession in an intelligent manner. As to the clinical courses in general medicine and surgery, they must also be of a special character, for in the vast domain of clinical medicine and surgery there are many features that are of very little interest to the dentist, while there are others that are of great importance and to which the dentist's attention should be especially called. Regarding the teaching of dentistry, he believes that it should be an essentially practical course, but that it must also embrace the theoretical, or rather the theoretico-demonstrative courses in certain subjects, namely, first, Dental anatomy, physiology, embryology, and histology. Second, Anatomy (descriptive, surgical and pathological), and physiology of the mouth and adjacent parts. Third, Dental and oral pathology. Fourth, Dental and oral therapeutics and hygiene of the mouth. Fifth, Clinical and operative dentistry, asepsis, antisepsis, general and local anesthesia. Sixth, Dental metallurgy, prosthesis and orthodontia. Regarding the study of forensic dentistry and dental jurisprudence the writer states that, as far as he is aware, all that part of forensic medicine which is in relation to dentistry ought to be part of a complete dental education, there being very many judicial cases in which the dentist, far better than any general physician or surgeon, would be able to enlighten the judges, and therefore he should be sufficiently prepared for the solution of all the queries on which he may be interrogated as legal expert.

To the above-mentioned subjects should be added two brief courses, one on the history of dentistry and the other on professional ethics.

The author thinks it unnecessary to refer to the practical teaching of dentistry, as this most important part of the dental curriculum is now so well organized in the dental schools of America and Europe. He refers to the Department of Dentistry of the University of Pennsylvania, and to the Ecole Dentaire, Paris, as examples of institutions in which the practical teaching leaves but little to be desired, yet the authorities of these schools, he says, work continually and spare no expense in order to introduce into this branch of dental teaching every possible improvement which may be suggested either by experience or by the progress of the specialty. Prosthetic dentistry in all its branches and to its full extent, clinical operative dentistry, and in addition clinical stomatology and oral surgery are now taught in these schools in a very satisfactory manner, and will be taught in a still better way when the prolongation of the course will permit the devoting of more time, not only to the scientific and medical parts, but also to the technical branches. In order to obtain the best possible results from dental education it is necessary that the general and the special or technical branches should proceed on parallel lines throughout the whole dental course. It



would be a great error to divide the two branches of instruction, and to devote, for example, two years to the study of solely scientific and medical subjects, and afterward another two or three years to the exclusive study of the specialty; for, in order to obtain good results, the manual training of the dental student should begin at as early an age as possible; and again, by prolonging the medical instruction of the dentist throughout the entire course of study, the student will become better familiarized with the medical subjects and will assimilate more medical knowledge with less risk of forgetting it. Besides, it is easy to understand that general and special study aid and complement each other in a most efficient manner. The intelligence, the special senses, and the hands of the dentist should be educated concomitantly and harmoniously.

The writer then discusses the following important question: Should the field of action of the dentist be limited to the dento-gingival region, as some maintain, or should it include as well the maxillary and oral diseases in general? In replying to this question the author states that the active field of the dentist is in proportion to the extent of his knowledge, and that the limits of his province will widen with the extension of the course in oral surgery.

After a lengthy exposition of arguments in favor of the preservation of the autonomy of dentistry, the author concludes by saying that it is true that dentistry was originally simply a branch of medicine, but it has been cultivated independently so that it gradually has become a large and magnificent tree, living a life all its own and deriving its nourishment from the common soil of natural and biological sciences. The establishment in America of the first dental school may be considered as the historic moment when dentistry, already practically separated from general medicine, effected its formal separation,—declaring, so to speak, its independence. This was an event of great importance, for it is precisely to that separation that dental art owes the development of which it may be justly proud. As a simple branch of medicine dentistry certainly would have developed much more slowly, and would be far from being to-day so rich in its literature or so perfect in its technics. Those who now endeavor to reduce dentistry to the status of simply a branch of medicine,—that is, seek to abolish its autonomy, undertake an impossible task. They forget that the sciences, in the same way as organized beings, tend in the course of centuries to differentiate and to specialize themselves more and more, and that it would be absurd to oppose oneself to this natural law of evolution.

[*Items of Interest*, New York, July, 1902.]

THE CLINICAL AND CHEMICAL STUDY OF A CASE OF DENTAL  
EROSION. BY DR. EDWARD C. KIRK, PHILADELPHIA, PA.

After referring to the previous theories relative to erosion of the teeth advanced by him at different periods since 1886, the author gives a full history of the case under consideration, stating that it was one of general acid erosion of the teeth, judging from the fact that all the surfaces of the teeth were being dissolved away. The most important problem, the writer says, was to discover the particular agent that was producing this destructive solvent action. His work with Dr. Michaels, of Paris, had led him to hope that possibly an investigation of the oral fluids would reveal the cause of the difficulty. That view seemed hopeful, for the reason that believing the erosion to be due to an acid acting upon the tooth-structure, one would naturally expect to find in the oral fluids the salts produced as the result of such action; but, as the result of the investigations by ordinary chemical methods proved practically negative, the author devised a new method of examination, which consists in the microscopical examination of dialyzed saliva.

The next difficulty to be confronted in the investigation consisted in the identification of the crystallized forms found in the dialyzed saliva. The author mentions certain known facts in connection with the case which aided him in solving this intricate problem, and suggested the possibility that the acidity was perhaps the result of lactic fermentation. Upon that hypothesis the line of study was quite simplified, as the only thing now necessary was to compare the salts found in the dialyzed saliva with those produced by the action of lactic acid upon tooth-structure; still, as lactic acid might not be the solvent, there being some reason to believe that the acid sodium phosphate might possibly be the dissolving agent, all of the compounds which acid sodium phosphate forms with the basis of the tooth were made.

The comparative study of these compounds with the salts of the saliva, using the micropolariscope, resulted in finding that the form of erosion in this particular case was due to the presence of lactic acid in the fluids of the mouth,—as the only salts that Dr. Kirk found in this saliva were lactates or lacto-phosphates, although evidences were found of the presence of the acid calcium phosphate, which is an exudate from the mucous glands, and also some traces of acid sodium phosphate.

The determination of the solvent in this case and the general nature of the disorder makes it necessary to divide cases of erosion into two classes, viz, those in which erosion is general, and those in which the phenomenon is due to the exudate from an abnormal buccal mucous gland or glands, the acidity of which is due to one of two agents, the acid sodium phosphate or the acid calcium phosphate.

After a discussion on the etiology of localized erosion, the author showed by means of a projecting micropolariscope, preparations which proved conclusively that the solvent agent in this particular case was lactic acid.

*[Journal of the British Dental Association, June, 1902.]*

#### A CASE OF REPLANTATION. BY DR. T. A. COYSE.

The case presented by Mr. Coys presents the history of a blow, a feature usually met with in this kind of cases. The patient, a strong boy, was struck in the mouth by a cricket-ball, as the result of which an upper right incisor was knocked completely out of its socket; the case was examined by the writer five hours after the accident, when it was ascertained that the physician called in immediately after the accident had extracted the upper left incisor because it was loose. The laterals were found to be very loose. After preparing the teeth in the usual way, plain bands of thin metal were fitted around each of them. To the backs of these bands were soldered tubes of  $\frac{1}{8}$  of an inch in length, at exactly right angles with the long axis of the teeth. (The writer remarks that care should be taken to see that tubes thus employed are at the same distance from the incisal edge of each tooth.) He then adjusted to the bicuspid clasp bands, to the buccal aspects of which he soldered a piece of tube five-eighths of an inch in length and of a caliber equal to pin-size wire, and finally a piece of German silver wire long enough to reach from bicuspid to bicuspid, upon each end of which a thread was cut, and two small nuts adjusted. These preparations were made with a view of using Angle's wire arch to support the teeth until consolidation should take place.

The wire arch was then curved until it fitted the exterior curve of the upper teeth, and its extremities were fitted into the tubes on the bicuspid clasp bands. The wire arch was adjusted by bending it up or down until it occupied the same height anteriorly as the tips of the teeth to be replanted would occupy posteriorly; a length of ligature wire was then passed over the arch and its other ends through the tubes on one of the incisors, and after

removal of the plugs and irrigation of the sockets the tooth was forced into it as nearly as possible to the right position. The ligature wire was then drawn tight and tied in front of the wire arch in the usual way; and the same plan was then followed with the other incisor. The result was that the teeth were held firmly until they showed signs of complete consolidation. The arch was worn for about six weeks. At the time of the presentation of this report, eight months after the operation, a careful examination showed that the teeth were perfectly firm, and could not be distinguished from the neighboring ones by any difference in color or sensation.

The author concludes his paper by stating that he has ventured to describe this application of Angle's arch as a new form of splint, he having never seen any description of this appliance used for the purpose described. He says that it might be urged that Angle's appliance may not be handy to everybody; to this objection he replies that any dentist who possesses pin-size wire, German silver, or plain matrix metal, and a screw-plate ought to find no difficulty whatever in making all he requires in about an hour, and that if success in a case such as this leads anyone to further experiment with the Angle system of regulation, so much the better.

[*Dental Brief*, Philadelphia, July, 1902.]

#### ALVEOLAR ABSCESS: ITS COMPLICATIONS AND TREATMENT.

By JAS. F. WESSELS, PHILADELPHIA.

The author states that it is generally conceded that by far the larger number of cases of alveolar abscess are associated with a devitalized pulp, but that usually it does not immediately follow the death of the organ: He gives the order of the phenomena which terminate in alveolar abscess, and after mentioning the symptoms of pericementitis takes up the treatment of this disturbance, saying that at times one may be uncertain whether the case with which the operator is confronted is one of pericementitis or one of pulpitis. The essayist then discusses the so-called "blind abscess," which may be either acute or chronic. In the acute form it is simply an abscess, the pus of which has not as yet formed an outlet through the tissues of the surface. In the case of a chronic "blind abscess" we have a much more serious condition, and may suspect necrosis of the alveolar process. The treatment that he recommends for both conditions is very similar.

The next question which he discusses is that of alveolar abscesses. One of the features of this method of treatment consists in his manner of using the hypodermic needle to force an antiseptic solution through the root. The method consists in packing the cavity with unvulcanized rubber and passing the needle through it. In this way he gets a tight joint and can use sufficient pressure to force the medicament through the root and abscess tract.

Regarding the force of fistulous tracts, it is stated that it is surprising how pus will burrow through or between tissues. He quotes the case of a young lady who had long suffered from a dull heavy pain on the right side of the head and upper jaw. For two years she had been under treatment for chronic post-nasal catarrh, and her general health had been on the decline. He suspected a devitalized pulp to be at the bottom of the trouble, and for this reason opened into a tooth which showed slight signs of discoloration. He then injected phénol sodique and found that it made its exit through an opening just in front of the uvula. The case responded to treatment, and in two months the abscess had healed, patient's health being much improved.

The author then quotes another case of a mistake in diagnosis, the serious condition of the patient having been due to a concealed alveolar abscess. The writer removed the suspected tooth, which proved to be the offending one, and the patient after two months regained her usual health.

After a discussion of the influences of systemic conditions on alveolar ab-



sciences, the author concludes his communication by stating that when the dental practitioner's competency in materia medica and therapeutics has been tested by those appointed to do so, he acquires, in his judgment, a legal right to use his knowledge in the treatment of systemic conditions which are in relation with legitimate dental work.

[*Le Progrès Dentaire*, Paris, July, 1902.]

## ACUTE POISONING WITH COCAIN.

This review quotes from *Journal des Praticiens* a most interesting article on cocain poisoning. It quotes from Dr. Bour's thesis in which appear statistics of all the published cases of cocain poisoning. Dr. Bour, from his experience, comes to the conclusion that the toxic dose of cocain varies according to the constitution of the individual. Cocain is, as Dastre has said, "a general poison, acting upon the tissue elements first by stimulating, then by depressing them." It must be stated, however, that it acts according to the way in which it is introduced into the system. In all cases, however, general vaso-constriction with high arterial pressure is observed, the intensity of the symptoms varying according to the quantity of the drug used. Dr. Bour has found that the toxic dose in man varies from two to three milligrams per kilo of body weight. This author has observed sixty-nine cases of cocain poisoning, of which sixteen were fatal. In several of them syncope was the prominent factor. Whenever the poisoning manifests itself by pallor and a tendency to syncope the prognosis is always serious. While there are cases of suicide, and of intoxication due to the use of cocain solutions as lotions, and sprays, only seldom do unfavorable results follow its use in therapeutic doses, and the accidents observed in the presence of such precautions can be attributed only to individual susceptibilities, to fear, or to a neuropathic state predisposing to syncope,—conditions which should be taken into consideration when using cocain as an anesthetic. The author states that the administration of therapeutic doses is seldom followed by unfavorable effects, if the proper technique in its administration be followed. In cases of acute intoxication the patient should be put in the dorsal decubitus, and should be given a vaso-dilator such as amyl nitrite. After that, black coffee can be given, also hypodermic injections of ether, general frictions, and diuretic draughts in order to hasten the elimination of the drug.

[*Quarterly Circular*, London, June, 1902.]

## CONTRIBUTION TO THE STUDY OF SOMNOFORM. BY DR. PINET, PROFESSOR OF ANESTHESIA AT THE ECOLE DENTAIRE OF PARIS, AND DR. CH. JEAY, CHIEF OF CLINIC.

The writers have experimented with "somnoform," the anesthetic mixture (composed of ethyl chlorid 60 per cent., methyl chlorid 35 per cent., ethyl bromid 5 per cent.), suggested by Dr. Rolland, of Bordeaux. They state that somnoform is not irritant, and that being very volatile it is readily eliminated, or, in Dr. Rolland's words, "the gaseous mixture penetrates into the organism and passes out like oxygen from the blood. It effloresces the blood-globules. Upon the nerves its action is as efficacious as it is direct." The writers describe their experiences with twenty-two cases, from which they draw the following conclusions:

In some cases somnoform acts rather as an analgesic than as an anesthetic, producing apsychia, a character which it obtains without a doubt from ethyl bromid, a substance with which there occurs an interval of time relatively long between the impressionability of the cerebral hemispheres and that of the medulla. "During the years that we have employed ethyl bromid either at the school or in private practice we have not seen, so far, that somnoform

is superior to it. Perhaps with certain patients anesthesia is more prolonged with somnoform than with ethyl bromid. In any case, with the latter anesthetic we have never observed subsequent symptoms, and our personal experience runs into more than six hundred cases."

[*Quarterly Circular*, London, June, 1902.]

#### THE TOOTH OF A NEWLY-BORN CHILD. BY M. KRAKOVSKI.

The following *résumé* of an observation of a child two days old which exhibited troubles due to premature eruption of a tooth is quoted from *Zoubovratchebny Vestnik*. The patient, a child two days old, born of healthy parents, was of feeble constitution and did not cease to scream and cry. It slept with open mouth, and across the buccal cavity it was seen that the tongue was slightly raised. On examination of the mouth it was found that there existed an ulceration upon the lower surface of the tongue near the tip. The posterior surface of the gum which corresponded with this ulceration presented a tumefaction of osseous substance. This tumefaction was nothing less than the central incisor surrounded by ulcerative gum. The incisor, which possessed no hold in the alveolus, was taken out with the finger. The ulcerous subglossitis rapidly healed and the child improved. The removed tooth in its entirety measured  $4\frac{1}{2}$  mm. in length, the root measuring 2 mm. The pulp-chamber was empty. At the age of two months the upper central incisors erupted; they also had no attachment to the alveolus. The child died at the age of six months from bronchial pneumonia.

---

### PERISCOPE.

---

**Annealing Gold or Copper.**—Gold or copper plate heated to redness and then dropped into alcohol, will be softer and cleaner than when water is used.—*Dental Register*.

**A Varnish for Plaster Models.**—Gum sandarac, 2 oz.; gum mastic, 1 oz.; Venice turpentine,  $\frac{1}{2}$  oz.; alcohol, 5 oz.; dissolve. This varnish is colorless, elastic, and leaves a fine glossy surface. Color with aniline dye if desired.—*Dental Era*.

**To Color Arsenical Paste.**—Add five per cent. of lampblack to arsenical paste, and it will be easy to detect any portion which gets on the tooth or outside the cavity in applying. It does not help or hinder the action of the arsenic.—G. V. BLACK, in *Dental Review*.

**Preparation of Cavities.**—In the preparation of cavities one should never hesitate to cut away all weak walls of enamel, after which the cavity may be formed so as to hold the filling, and no cavity will ever be found that cannot be given a retaining form.—*Dental Register*.

**Properties a Tooth-Powder Should Possess.**—Tooth-powders should be perfectly impalpable, agreeable to the taste, soluble in water, of slight alkaline reaction (as both strong alkalies and acids are injurious to the substance of the enamel), antiseptic, and also inexpensive.—J. E.

**To Make Amalgam Adhere to Your Carrier.**—Drill a hole in the end of the instrument, undercut the same to hold a filling, and fill with alloy, and when set, smooth off with file or sand-paper, and you have an instrument with which you can pick up alloy easily and quickly.—*Dental Summary*.

**Rare Cases of Plumbism.**—Dr. Adolf Weber reports a number of cases having their origin in lead water-pipes and in the presence of lead in flour. The author favors, in the treatment of this condition, hypodermic injections of atropin sulfate rather than opium or belladonna.—*New York Medical Journal*.

**Dental and Race Degeneracy Connected.**—"If the learned philosopher had lived to-day he might have gone even further, and announced without hesitation that strong teeth are essential to the best types of manhood, and that degeneracy of the teeth means deterioration of the race."—SAMUEL A. HOPKINS, in *Items of Interest*.

**Irritation and Bleeding of the Gums Incident to the Scaling and Polishing of Teeth.**—The irritation and bleeding of the gums incident to the scaling and polishing of teeth can be advantageously treated with glycerite of tannin, which should be brushed over the gums and around the necks of the teeth by means of cotton wound around an orange-wood stick.—J. E.

**Removal of Pulp Remnants.**—When sensitive tissue is found in root-canals after removal of the pulp, insert the point of a fine hypodermic needle and force in a few drops of chloroform. The tissue can then be extracted without pain, though previously the sensitiveness may have been so great as to make entrance with a broach impossible.—*International Dental Journal*.

**Brushing the Tongue.**—At as early an age as possible the habit of brushing the tongue should be incorporated with the care of the teeth, for the tongue forms a lodging- and breeding-place for bacteria, and by keeping it clean not only are the teeth protected, but the health of the child as well, nothing being better for this purpose than the ordinary tooth-brush.—*Items of Interest*.

**A High Privilege.**—"I have always thought (and not without reason) that to have published for the benefit of afflicted mortals any certain method of subduing even the slightest disease was a matter of greater felicity than the riches of a Tantalus or a Croesus. I have called it a matter of greater felicity. I now call it a matter of greater goodness and of greater wisdom."—SYDENHAM.

**Infantile Scorbutus.**—Dr. Comly reports (*Progrès Medical*) the case of an infant of nine and one-half months, in whom the symptoms of infantile scorbutus appeared as a consequence of being fed partly on artificial food and partly on the breast. A week after the changing of the feeding to fresh boiled milk with the addition of three teaspoonsfuls of raisin juice a day, an improvement was noticeable, and at the end of a month the cure was complete.

**Silver Vitellin** is a new silver-protein compound described by Barnes and Hille in the *Medical Record* for May 24, 1902, page 814. It is a dark brown powder containing thirty per cent. of silver, the equivalent of fifteen per cent. of silver nitrate, extremely soluble in water, an ounce of silver vitellin dissolving in a dessertspoonful of water, according to the discoverers. Its solutions do not coagulate albumin or precipitate chlorids.—*New York Medical Journal*.

**A Case of Necrosis of the Lower Jaw following an Attack of Scarlet Fever.**—Dr. Hodge showed before one of the recent meetings of the Manchester Odontological Society, a boy aged four and a half years, in whom the



jaw had been the seat of necrosis. He had suffered from an attack of scarlet fever. Five months after he became convalescent the sequestrum came away, bearing the temporary incisors, both canines, and also the partially calcified crown of the permanent lateral incisor.

**Band Does Not Prevent Splitting of Root.**—The claim that the band prevents the splitting of the root I believe to be an error; the root at the gum margin is larger and stronger, and the fracture begins at the extreme end of the pin, certainly at the weakest point of the enlarged canal. This canal should be formed equidistant from the periphery of the root and tapering as the root tapers. The pin should be made to conform to this opening its entire length, so that there will be no wobbling in the direction of stress, and it should be made of rigid material.—*Dental Review*.

**Painless Insertion of Crowns.**—The crown being finished, its inner surface is painted with carbolic acid ninety-five per cent. The tooth is then dried, and the crown placed over it in position as it will be when set. It is allowed to remain there for a short time. The small quantity of carbolic acid which escapes under the gingival edge anesthetizes the gums, and the crown may then be set without causing pain. Due care must be exercised to prevent cauterizing too extensively with the acid; though this is not difficult with a well-fitting crown. A little alcohol should be handy, to overcome the cauterant effect as soon as the operation is over.—*Items of Interest*.

**Healing of Wounds in the Mouth.**—It is a well-known fact that wounds in the mouth heal with exceeding rapidity. It seems as though the contents of the mouth,—secretions, microbes, or what not,—stimulate the healing process. Witness, for example, how dogs lick their sores, cuts, and bruises, and how under this dressing they get well in a remarkably short period of time. I have just read of a passenger in a train who had the end of his finger mashed by shutting the door of his compartment as his train was leaving Genoa, Italy. This wounded man sucked his finger until he reached Geneva, in Switzerland, and the wound healed without further treatment. One of the most fertile and unexplored fields in bacteriology is that of bacterial association, or the influence that one microbe has over another.—*International Dental Journal*.

**Crowning of Teeth Having Living Pulp.**—The necessity of such a step depends largely upon the constitution of your patient. We all know that there are some patients whose pulps will die under the least provocation; and, on the other hand, those whose pulps will live and remain healthy if given only half a chance. Again, the amount of shock which the pulp must sustain in order to make the necessary alteration in the contour of the tooth to insure a properly-fitting band will determine for us whether or not it should be removed; for any pulp which is severely shocked by the great amount of grinding sometimes necessary on sensitive teeth will eventually result in its giving trouble enough to compel us to open up the tooth and remove it. Just here it might be well to mention that we too frequently err in removing too much of the contour of the tooth in order to get a proper fit beneath the gum. It is not at all times necessary to get below the free margin of the gum with your band. If we can obtain sufficient retention for our cap without doing so, so much the better. Good, sound enamel from the edge of your crown to the gum is just as good as gold, and if left there, frequently saves a great deal of trouble, both in preparing the tooth and from endangering the health of the pulp.—*Dominion Dental Journal*.

**To Polish German Silver, Regulating Bands, etc.**—Pickle in hydrochloric acid and insert in a good-sized piece of modeling compound which has been softened in the flame of a Bunsen burner. Cool and trim away excess of investment to expose the surface to be polished, and use brick of Tripoli with suitable brush wheels on lathe, and finish with fine chalk or rouge.—*Dental Era*.

**Removal of Plaster Impressions.**—When taking an impression let the plaster set quite hard, say from three to five minutes. Then hold up the lip and place the nozzle of your water syringe between the muscular tissue and the edge of the impression, and gently force a little water between, repeating the operation all around the impression. In nine out of ten cases it will drop down without any pulling or even touching with the hand. This method may not be new, but I have used it for some time with great satisfaction to patients as well as to myself, and some dentists may be benefited by the suggestion.—*Dental Digest*.

**A Curious Case.**—Dr. Hodge described before the Manchester Odontological Society the case of a boy who presented himself at the hospital with an upper central incisor partly erupted into the middle of the upper lip. The case was treated by cutting down the incisal edge of the tooth. Three days afterward he again presented himself, with a large amount of granulation tissue over the cutting edge of the tooth. Some days afterward he came in again, when, under the influence of nitrous oxid, the lip was dissected away and the simple treatment adopted of putting a piece of rubber tubing on the crown, projecting beneath to prevent the lip from again folding around the tooth.

**Faulty Crowns.**—Too many crowns are made, whether gold or porcelain, that do not fill the interdental space, a condition resulting in great annoyance to the wearer; and the poorly-fitting band which generally accompanies these carelessly made affairs adds still more to the discomfort of the poor victim by being a place of retention to fibers of food material. The crown being straight-sided is adapted to invite this compacting of the food, so that instead of having a beautiful pink gum tissue closely adherent to the necks of the artificial teeth, with circulation perfect, with physiological action complete, always protected by the pronounced over-arching which nature provides, the festoons of the gum become congested; the soft tissue because of the engorgement sometimes fills the false space, no part of which can be touched without profuse bleeding; brushing then becomes a painful task, is often neglected, and may even be abandoned.—*Dominion Dental Journal*.

**Indications for the Use of Chloroform.**—Chloroform is preferable for infants and young children, as it is also for patients of advanced years, because of the greater danger of pneumonia, and if arterio-sclerosis be present, of cerebral trouble, from the use of ether. If advanced arterio-sclerosis exist, both ether and chloroform are dangerous drugs, and either must be employed with great caution. Ether causes cerebral congestion and is not to be preferred for intracranial operations. For the same reason, and also because it can be administered with less interference to the operator's manipulations than can ether, chloroform is to be selected for operations upon the mouth and throat. An important exception to this rule exists in anesthetization for the removal of adenoid growths and enlarged tonsils. In these cases, and in all cases where there exists the so-called *status lymphaticus*, chloroform is distinctly dangerous.—*International Dental Journal*.

**Further Suggestions to Anesthetists.**—Under this title De Tarnowsky advises as follows:

1. Always reassure the patient before beginning an operation.
2. Avoid or lessen the sense of suffocation by starting with a small amount of the anesthetic, holding the cone six inches from the patient's face, and decreasing the distance by gradual degrees.
3. Count out loud from one to one hundred, requesting the patient to repeat the numerals after you.
4. Push the anesthetic so soon as the higher centers show inco-ordination.
5. Always keep the lower jaw well forward, and only use the mouth-gag and tongue forceps when necessary.
6. During complete narcosis, watch (a) respiration, (b) pulse and facial artery, (c) pupils.
7. Consider (a) lateral rolling of eyeballs, (b) deep sighing respiration, (c) deglutition movements, (d) the hiccough which precedes the act of vomiting, as signals to push anesthetic. The precursory hiccough is always a positive sign of returning reflexes; by immediately pouring an ounce of ether on the cone and precluding air, it is always possible to prevent actual vomiting.—*Therapeutic Gazette*.

**A Point About Cement Fillings.**—Cement fillings should be absolutely dry before being allowed to come in contact with the fluids of the mouth, as otherwise they will absorb moisture, will not become thoroughly hardened, and will act as a constant menace to the life of the tooth instead of as a barrier against the ingress and development of micro-organisms. This is a point that is very much neglected, a large majority of operators allowing the saliva to bathe the filling immediately after its insertion has been completed. It cannot be definitely stated how long it takes for a cement filling to become thoroughly hardened, this being governed by the qualities possessed by the particular material used, but what can be safely asserted is that it takes at least from two to three hours. As it would be inconsistent with the time at the disposal of both operator and patient, and almost a cruel procedure to demand that the rubber dam or the napkins used to exclude the oral fluids be left in the mouth until the filling is perfectly dry, operators must have recourse to other means if it be desired for the cement filling to accomplish its full therapeutic purpose. Many methods have been devised to compass this end, but the simplest one to the writer's knowledge consists in protecting the surface of the filling with a coating of collodion, which after evaporation leaves a film that excludes salivary secretion, and does not deteriorate until long after the filling has become thoroughly hardened. It is unquestionable that some of the failures with cements are due, among other causes, to the non-observance of this precaution, and operators should try the above suggestion, when they will probably become thoroughly convinced of its usefulness and importance.—J. E.

### **Preservation of the Teeth of School-children.**—

Without good teeth there cannot be good mastication.

Without thorough mastication there cannot be perfect digestion, and poor health results.

Hence the paramount importance of sound teeth.

Clean teeth do not decay.

The importance of a sound first set of teeth is as great to the child as a sound set is to the adult.

Children should be taught to use the tooth-brush early.

Food upon the teeth ferments, and the acid formed produces decay.

The substance of the following rules should therefore be impressed constantly upon children:



1. The teeth should be cleansed at least once daily.
2. The last time to cleanse the teeth is after the last meal.
3. A small tooth-brush with stiff bristles should be used, brushing up and down and across, and inside and outside, and between the teeth.
4. A simple tooth-powder or a little soap and some precipitated chalk taken up on the brush may be used if the teeth are dirty or stained.
5. It is a good practice to rinse the mouth out after every meal.
6. All rough usage of the teeth, such as cracking nuts, biting thread, etc., should be avoided, but the proper use of the teeth in chewing is good for them.

When decay occurs it should be attended to long before any pain results. It is the stopping of a small cavity that is of the greatest service.

(Rules recommended by the School-children's Committee of the British Dental Association, and circulated for the information of managers and teachers of the national schools in Ireland.)—*Journ. of the Brit. Dental Association.*

## DENTAL SOCIETY ANNOUNCEMENTS.

### COMING DENTAL MEETINGS—AUGUST AND SEPTEMBER, 1902.

#### AUGUST.

AMERICAN DENTAL SOCIETY OF EUROPE. August 12th to 15th.

INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF DENTAL EDUCATION. August 15th to 20th.

VIRGINIA STATE DENTAL ASSOCIATION. Old Point Comfort. Three days: August 5th, 6th, and 7th.

#### SEPTEMBER.

NORTHERN IOWA DENTAL SOCIETY. Cedar Rapids. Three days: September 2d, 3d, and 4th.

DENTAL SOCIETY OF THE PROVINCE OF NOVA SCOTIA. Truro. Two days: September 23d and 24th.

DENTAL SOCIETY OF THE PROVINCE OF QUEBEC. Montreal. September 2d.

#### EXAMINING BOARDS.

ARIZONA. Phoenix. September 8th.

### CANADIAN DENTAL ASSOCIATION.

THE first meeting of all the dentists in Canada will be held in Montreal, September 16, 17, and 18, 1902. A National Board of Dental Examiners and a Canadian Dental Association will be organized. Some of the most eminent dentists in America will assist on the program. Dealers wishing to make an exhibit of goods may have space allotted them by applying to the secretary.

EUDORE DUBEAU, D.D.S.,  
396 St. Denis st., Montreal, Can.

### VIRGINIA STATE DENTAL ASSOCIATION.

THE Virginia State Dental Association will hold its next annual session at Old Point Comfort on August 5, 6, and 7, 1902. This date follows the adjournment of the National Association at Niagara, and will give a fine

opportunity for all desiring to continue their summer outing at most reasonable rates. All members of the profession are cordially invited to attend.

GEO. F. KEESEE, *Sec'y.*

### NORTHERN IOWA DENTAL SOCIETY.

THE eighth annual meeting of the Northern Iowa Dental Society will be held at Cedar Rapids, Iowa, September 2, 3, and 4, 1902. An extraordinarily interesting program is assured.

Special railroad and hotel rates.

W. G. CRANDALL, *Sec'y,*  
Spencer, Iowa.

### AMERICAN SOCIETY OF ORTHODONTISTS.

THE second annual meeting of the American Society of Orthodontists will be held in Philadelphia, October 8, 9, 10, 1902. Complete announcement in due time.

MILTON T. WATSON, *Sec'y,*  
270 Woodward ave., Detroit.

### WEST VIRGINIA BOARD OF DENTAL EXAMINERS.

THE West Virginia State Board of Dental Examiners will meet at Parkersburg on August 6, 7, and 8, 1902, for the examination of candidates. The examination will include all branches taught by representative schools, together with operations in the mouth.

J. F. BUTTS, *Sec'y.*

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

**Andrews** (R. R.) The embryology of the dental pulp. *J. Am. M. Ass.*, Chicago, 1902, xxxviii, 1619-1622.—**Aschoff**. Missbildung der Zunge bei Agnathie. *Verhandl. d. deutsch. path. Gesellsch.* 1901, Berl., 1902, 176, 1 pl.—**Audebert** (J.) Morsures profondes de la langue chez une éclamptique; hémorrhagie abondante. *Toulouse med.*, 1902, 2. s., iv, 97-99, 1 pl.—**Barbe** (F.) Ein neues Mittel gegen sensiblen Dentin. *Zahnärztl. Wchnschr.*, Hamb., 1902, xv, 193.—**Barber** (W. A.) Sterilization of instruments and use of distilled water in oral cavity. *Dental Summary*, Toledo, Ohio, 1902, xxii, 305-310.—**Barclay** (H. C.) A case of macroglossia in a native.

N. Zealand M. J., Wellington, 1901-2, ii, 250.—**Bauchwitz** (M.) Ueber Anaesthesie sensiblen Dentins mittels Kohlensäure. *Deutsche zahnärztl. Wchnschr.*, Wiesb., 1902, v, 17-19.—**Baudry-Mills** (A. F.) Should anaesthetics be administered by dentists? *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 279.—**Bissell** (W. G.) The bacterial pathology, symptomatology, diagnosis, treatment and quarantine of tonsillar inflammation. *Med. News*, N. Y., 1902, lxxx, 1012-1016.—**Black** (G. V.) A restatement of the principles of extension for prevention and some correlated subjects. *Dental Rev.*, Chicago, 1902, xvi, 439-451.—**Bland** (C. A.) Esthetics in operative dentistry. *Dental*

- Cosmos, Phila., 1902, xlv, 580-582. [Discussion], 594-598.—**Blumfeld** (J.) Complete relaxation of the abdominal wall under anaesthetics. *Lancet*, Lond., 1902, i, 1523-1525.—**Borgoni** (R.) Cronica sinusite del mascellare di destra con suppurazione dei seni etmoidali e sinusite sfenoidali. *Gior. ital. di laringol., otol. e rinol.*, Napoli, 1902, iii, Nos. 2, 3.—**Bostock** (A. L.) Articulation of artificial dentures and retention of these in edentulous cases. *Austral. J. Dent.*, Melbourne, 1901-2, v, 208-216.—**Brodtbeck** (A.) Ueber den Einfluss der Ernährung auf die Zähne. *Schweiz. Vrtljschr. f. Zahn.*, Winterthur and Genève, 1902, xii, 120-129.—**Broomell** (I. N.) The calcification of dentin and enamel, and its relation to hypersensitiveness in these tissues. *Dental Brief*, Phila., 1902, vii, 305-310. [Discussion], 315-317.—**Bum** (R.) Ueber Anästhesie der Zähne mit Hilfe von Hochfrequenzströmen (d'Arsonval). *Oesterr.-ungar. Vrtljschr. f. Zahn.*, Wien, 1902, xviii, 282-286.—**Cabanès**. De l'extraction des dents. *J. de la santé*, Par., 1902, xix, 383.—**Capart fils**. Anomalie rare du sinus maxillaire. *Bull. Soc. belge d'otol.* [etc.], Brux., 1901, vi, 50-52.—**Capdepont** (C.) Recherche méthodique d'une dent de sagesse en évolution ou incluse. *Rev. de stomatol.*, Par., 1902, ix, 236-239.—**Capon** (F. J.) Lectures on crown and bridge-work. *Dominion Dent. J.*, Toronto, 1902, xiv, 234-244.—**Capon** (R. M.) Pyorrhoea alveolaris. *Dental Rec.*, Lond., 1902, xxii, 249-254.—**Carveth** (G. H.) A case of congenital tooth. *Canad. J. M. & S.*, Toronto, 1902, xi, 355.—**Chambers** (T. R.) Glandular complications of tonsillitis and peritonsillitis. *Tr. Am. Laryngol., Rhinol. & Otol. Soc.* 1901, N. Y., 1902, vii, 123.—**Chevassu** (M.) Leucoplasie buccale et cancer. *Bull. et mém. Soc. anat. de Par.*, 1902, lxxvii, 81-84.—**Christensen** (C.) Blocchi a tubo: lavori a gengiva continua su base d'oro. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 156-160.—**Clevenger** (W. F.) Direct medication of the Eustachian tubes. *N. York M. J.*, 1902, lxxv, 1010.—**Comstock** (W. C.) Some interesting mastoid cases. *Homœop. Eye, Ear and Throat J.*, N. Y., 1902, viii, 188-194.—**Crenshaw** (W.) Non-cohesive versus cohesive gold for cervical margins. *Dental Cosmos*, Phila., 1902, xlv, 569-571.—**Delorme** (E.) Le chloroforme anesthésique. *Caducée*, Par., 1902, ii, 71.—**Depage** (A.) Endothéliome de la glande lacrymale et sarcome de la parotide; ablation des deux tumeurs; guérison. *Compt. rend.* . . . serv. de chir. à l'hôp. S.-Jean de Bruxelles (1900, 1901), 23-25.—**Maladies de la face, des maxillaires et de la cavité buccale**: [table]. *Ibid.*: 32.—**Carcinôme de la base de la langue**; trachéotomie préventive; ligature des deux carotides externes; ablation de la langue par la voie sous-maxillaire; mort, le douzième jour, par hémorrhagie secondaire. *Ibid.*: 35.—**Derocque & Nicolle**. Un cas d'hypermorphie épithéliale piliforme de la langue. *Normandie méd.*, Rouen, 1902, xvii, 202.—**Dorn** (R.) Sull'uso dell'acqua ossigenata in odontoiatria; con ispeciale riguardo al perossido d'idrogeno purissimo di Merck; contenente 30 per cento in peso-100 volumi per cento H<sub>2</sub>O<sub>2</sub>. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 139-147.—**Dudley** (W. F.) Papillomatous growths of the soft palate. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 230-234.—**Erhart** (J. H.) Goldkronen-Modifikation. *Deutsche zahnärztl. Zeitung*, München, 1902, No. 14.—**Essig** (F. H.) The past and future in dentistry. *Dental Reg.*, Cincin., 1902, lvi, 280-283.—**Etchepareborda** (N.) Inclusion de una muela del juicio en la parte superior de la rama del maxila inferior. *An. san. mil.*, Buenos Aires, 1902, iv, 281-291.—**Ferreby** (T. G.) Dental prophylaxis. [Abstr.] *Dental Cosmos*, Phila., 1902, xlv, 584-587.—**Flagg** (E. M.) Orthodontia and its relation to temperament. *Items Interest*, N. Y., 1902, xxiv, 419-424.—**Forshaw** (C. F.) Case of tumor of the superior maxilla. *Canad. J. M. & S.*, Toronto, 1902, xi, 357.—**Friedemann**. Die Promotionsbedingungen für Zahnärzte in Rostock. *Deutsche zahnärztl. Wehnschr.*, Wiesb., 1902, v, 69-71.—**Frisselle** (Marcellus Mason). [1822-1902.] (Obituary.) *Dental Cosmos*, Phila., 1902, xlv, 644.—**Frizzoni** (D.) Causes et prophylaxie des infections buccales. *Rev. trimest. suisse d'odont.*, Winterthur and Genève, 1902, xii, 94-115.—**Fullerton** (R.) Primary gangrene of the tonsils. *Lancet*, Lond., 1902, i, 1599-1601.—**Gessner** (H. B.) Clinical report of two cases of osteosarcoma of the inferior maxillary treated by excision, with report of the condition of the patients after one year. *Tr. South. Surg. and Gynec. Ass.* Phila., 1902, xiv, 337-344.—**Goadby** (K. W.) Pyorrhoea alveolaris. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 494-503.—**Goldstein** (M. A.) Acute suppurative of the faucial tonsil and peritonsillar tissue. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 107-110.—**Goris**. Un cas de tumeur thyroïdienne de la base de la langue; extirpation par les voies naturelles; guérison. *Bull. Acad. roy. de méd. de Belg.*, Brux., 1902, 4. s., xvi, 315-318, 1 pl.—**Goslee** (H. J.) The band and dowel crown. *Items Interest*, N. Y., 1902, xxiv, 401-418.—**Grant** (H. H.) Ulceration from carious tooth. *Louisville Month. J. M. and S.*, 1901-2, viii, 471.—**Grayston** (W. C.) Some forms of extracting forceps. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 274-277.—**Non-cohesive gold**. *Dental Rec.*, Lond., 1902, xxii, 245-248.—**Greve**. Zeit- und Streitfragen. *Deutsche zahnärztl. Wehnschr.*, Wiesb., 1902, v, 26-29.—**Grimaud**. Sur l'opportunité de l'extraction de la dent de six ans. *Rev. odont.*, Par., 1902, xxi, 165-172.—**Günther** (R.) Zur Mund- und Zahnpflege. *Deutsche zahnärztl. Wehnschr.*, Wiesb., 1902, v, 35-41; 48-51.—**Guillén** (M.) Relaciones de la leucoplasia bucal con la sífilis y el cáncer.



- Rev. españ. de sif. y dermat., Madrid, 1902, iv, 220-226.—**Hahn** (G.) Dui casi dalla pratica. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 148-152.—**Hallauer** (O.) A case of phlegmon of the orbit after extraction of a tooth. Arch. Ophth., N. Y., 1902, xxxi, 230-237.—**Hallopeau & Fournier** (E.) Contribution à l'étude des atrophies cuspidiennes systématisées de la seconde dentition. Bull. Soc. franç. de dermat. et syph., Par., 1902, xiii, 227-229.—**Halstead** (T. H.) Empyema of the right maxillary, ethmoidal, and sphenoidal sinuses with sudden blindness of left eye. Operation. Recovery of sight. Tr. Am. Laryngol., Rhinol. and Otol. Soc. 1901, N. Y., 1902, vii, 61-70.—**Hartz** (H. J.) Peritonsillar suppuration. *Ibid.*: 111-116, 1 pl.—**Hashimoto** (Y.) and **Y. Chiaki**. [A case of actinomycosis of the inferior maxillary bone.] Tokyo Iji-Shinshi, 1902, 429-432.—**Herber** (C.) Acque dentifricie. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 175-180.—**Hinkins** (J. E.) What chemical influence has saliva on cement? Dental Cosmos, Phila., 1902, xlv, 564-569. [Discussion], 606-610.—**Hirtz** (E.) Las estomatitis urémicas y su diagnóstico. [Transl.] Gac. méd. de Granada, 1902, xx, 169-176.—**Hönez** (K.) Die Beziehungen der Stomatologie zu den übrigen Fachwissenschaften der Medicin. Wien. Zahnärztl. Monatschr. 1902, iv, 201-218.—**Hoffmann** (H.) Ein Todesfall in der Chloroform-Narkose. Ztschr. f. Med.-Beante, Berl., 1902, xv, 379-381.—**Holden** (S. R.) Why fillings placed in the disto- or mesio-incisal surface of incisors and cuspids should be anchored at right angles to cavity proper. Dental Rev., Chicago, 1902, xvi, 455-464.—**Hopkins** (F. E.) Malignant disease of the tonsil. Tr. Am. Laryngol., Rhinol. and Otol. Soc. 1901, N. Y., 1902, vii, 125-136.—**Jacquet** (L.) La pelade d'origine dentaire. Rev. de stomatol., Par., 1902, ix, 225-230. [Discussion], 250-253.—**James** (F. B.) Necrosis of the maxilla. Dental Cosmos, Phila., 1902, xlv, 582-584.—**Jenkins** (M. S.) Emploi de l'acide carbonique chaud. Rev. odont., Par., 1902, xxi, 172-174.—**Johnson** (C. N.) Management of the teeth up to the eighteenth year in mouths very susceptible to decay. Dental Rev., Chicago, 1902, xvi, 464-472.—**Josias**. Un cas de fièvre aphteuse chez un enfant âgé de treize mois. Tribune méd., Par., 1902, 450.—**Katsura** (H.) [A case of perforating ulcer of right angle of mouth.] Saisei Gakusha Iji Shimpo, Tokyo, 1902, 113-117.—**Keith** (G. S.) Foreign bodies in the windpipe. Brit. M. J., Lond., 1902, i, 1400.—**Kleinmann**. Heinrich's Form-Stanzapparat. Zahnärztl. Wehnschr., Hamb., 1902, xv, 177.—**Klix**. Per l'igiene della bocca. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 181-184.—**Kohlhardt** (H.) Ueber den Werth der örtlichen Schmerzbetäubung und ihrer verschiedenen Methoden. Ztschr. f. Krankenpf., Berl., 1902, xxiv, 101; 150.—**Krausz** (O.) Die Decuspida-tions-Methode als ein Behelf in schwierigen Fällen von Wurzelfüllungen. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 243-250.—**Kuvchinski** (V.) [Foreign bodies of the trachea.] Vrach. Gaz., S.-Petersb., 1902, ix, 105.—**Landsberger** (R.) L'avvenire dell'odontojatria. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 99-106.—**Lane** (A.) Operation for cleft palate on a child, aged two days and a half. Med. Press and Circ., Lond., 1902, n. s., lxxiii, 574.—**Lartigau** (A. J.) & **M. Nicoll, jr.**—A study of hyperplasia of the pharyngeal lymphoid tissue (adenoids), with especial reference to primary tuberculosis of the pharyngeal tonsil. Am. J. M. Sc., Phila., 1902, n. s., cxixii, 1031-1050.—**Lauwers**. Over heekkundige behandeling der trigeminus-neuralgie door uitsnijden van den ganglion Gasserii. Handel. v. h. vlaamsch nat.-en geneesk. Cong., Gent en Antwerpen, 1901, v, 92-96.—**Lébedinsky**. Ostéomyélite du maxillaire inférieur d'origine dentaire; compliquée de tic douloureux de la lèvre inférieure. Rev. odont., Par., 1902, xxi, 152-164.—**Lefèvre** (C.) Myxochondrome du maxillaire inférieur droit chez un homme de 50 ans; résection; guérison. J. d. sc. méd. de Lille, 1902, i, 464-468.—**Lehnhoff-Wyld** (F.) El cloroformo y las mezclas de Schleich. Juventud méd., Guatemala, 1902, iv, 70-73.—**Lemere** (H. B.) The lingual tonsil. Medicine, Detroit, 1902, viii, 478-480.—**Lengemann**. Anästhesin in der Wundbehandlung. Centralbl. f. Chir., Leipz., 1902, xxix, 585.—**Lermoyez** (M.) & **G. Gasne**. Goutte aiguë du pharynx. Ann. d. mal. de l'oreille du larynx [etc.], Par., 1902, xxviii, 398-407.—**Lewis** (F. P.) Adenoids in relation to structural changes. Internat. Dent. J., Phila., 1902, xxiii, 393-401.—**Lieven**. Mercurielle Erscheinungen im Munde. Zahnärztl. Wehnschr., Hamb., 1902, xv, 178.—**Linde** (T.) Ein neues Lokalanästhetikum. Zahnkunst, Bresl., 1902, vi, No. 17.—**Lord** (Benjamin.) [1819-1902.] How (W. S.) (Obituary.) Dental Cosmos, Phila., 1902, xlv, 641-643, port.—**Lortat Jacob** (L.) Néoplasie cervico-maxillaire, survenue chez un trieur de graines, et présentant les caractères cliniques de l'actinomycose. Rev. de stomatol., Par., 1902, ix, 231-236.—**Lunin** (N. I.) [Hemorrhages following removal of the pharyngeal tonsil.] Bolnitsch gaz., Botkina, St. Petersburg, 1902, xiii, 81-93.—**McCabe** (W. D.) Suggestive therapeutics. Dental Cosmos, Phila., 1902, xlv, 589-591.—**McCardie** (W. J.) Some remarks on general anaesthetics in dental surgery. J. Brit. Dent. Ass., Lond., 1902, xxiii, 249-264.—A case of fainting and another of vomiting after operation under ethyl chloride narcosis. Birmingham M. Rev., 1902, li, 351-353.—**McCaw** (J.) Influenza as a causal factor in acute mastoiditis, and early treatment. Tr. Am. Laryngol., Rhinol. and Otol. Soc. 1901, N. Y., 1902, vii, 320-337.—**McCrindle** (J. R. R.) Case of cesophagotomy for a foreign body. Brit. M. J., Lond., 1902, i, 1335.—**McKinney** (R.)

- Pathological tonsils, with some consideration of treatment. *Memphis M. Month.*, 1902, xxii, 289-301.—**Macleod** (A.) The dental profession in relation to the general health. *Internat. Dent. J.*, Phila., 1902, xxiii, 402-405.—**Madzsar** (J.) Bakteriologisches aus der stomatologischen Litteratur. *Centralbl. f. Bakteriol.* [etc.], 1 Abt., Jena, 1902, xxxi, Referate, 489-497.—**Malloizel** (L.) Sur la sécrétion de la glande sous-maxillaire, après injections sous cutanées de pilocarpine. *Compt. rend. Soc. de biol.*, Par., 1902, 11. s., iv, 477-479.—Quelques expériences sur la sécrétion de la glande sous-maxillaire pendant l'action de la pilocarpine. *Ibid.*: 479-481.—**Mamlock** (H. J.) Una corona di porcellana amovibile. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 152-155.—Versammlung zur Förderung der Porzellanfüllungen. *Deutsche Monatschr. f. Zahnh.*, Leipz., 1902, xx, 231-252.—**Manasse** (K.) Zwei Fälle von isolirter rheumatischer Erkrankung der Kiefergelenke. *München. med. Wehnschr.*, 1902, xlix, 839.—**Marsh** (F.) Chronic hypertrophy of the faucial and pharyngeal lymphoid or adenoid tissues. *Lancet*, Lond., 1902, i, 1587-1591.—**Martin** (C.) Ueber den Nutzen der Behandlung cariöser Milchmolaren. *Wien. zahn-ärztl. Monatschr.*, 1902, i, 175-187.—Also: J. f. Zahnh., Berl., 1902, xvii, 70-74.—**Miller** (C. B.) Cleft palate case. [Abstr.] *Dental Cosmos*, Phila., 1902, xlv, 571-574.—**Miller** (W. D.) Das Vorkommen eines Bakterien-hautchens auf der Oberfläche der Zähne und seine Bedeutung. *Deutsche Monatschr. f. Zahnh.*, Leipz., 1902, xx, 193-214.—**Montgomery** (D. W.) & **Sherman** (H. M.) Epithelioma of the upper lip; removal of the lip and its reconstruction. *Occidental M. Times*, San Fran., 1902, xvi, 215-217.—**Moody** (J. D.) Care of teeth. *Pacific Dent. Gaz.*, San Fran., 1902, x, 361-366.—**Mora**. Esquisses déontologiques. *Rev. odont.*, Par., 1902, xxi, 194-215.—**Morton** (A. W.) Removal of superior maxilla for carcinoma. *Pacific M. J.*, San Fran., 1902, xlv, 242.—**Moyer** (W. H. K.) The necessity for occlusal anchorages for fillings placed in the mesio or disto-occlusal surfaces of bicuspid and molars. *Dental Rev.*, Chicago, 1902, xvi, 472-477.—**Munger** (C. E.) Diseases of Stenson's duct and the treatment. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 154-159.—**Murray** (W. N.) The present status of the porcelain inlay. *Dental Rev.*, Chicago, 1902, xvi, 489-494.—**Natier** (M.) & **Zund-Burquet**. Vices de prononciation et anomalies dentaires. *Bull. Soc. belge d'otol.* [etc.], Brux., 1901, vi, 91-98.—**Noe** (J.) Vitesse de croissance des incisives chez les léporides. *Compt. rend. Soc. de biol.*, Par., 1902, 11. s., iv, 531.—**Noel** (L. G.) An alveolar abscess with opening upon the outside of the face, caused by death of the pulp in a third molar independent of caries. *Dental Cosmos*, Phila., 1902, xlv, 562-564. [Discussion], 603-605.—**Nyman** (J. E.) Porcelain bridge work. *Dental Rev.*, Chicago, 1902, xvi, 498-508.—**Oppenheimer** (S.) A case of primary epithelioma of the uvula. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 236-238.—A general consideration of hyperplasia of the lingual tonsils. *Am. Otol., Rhinol. and Laryngol.*, St. Louis, 1902, xi, No. 2, 231-253.—**Orloff** (L. V.) Ankylosis mandibulae vera. *Vestnik Khir.*, Mosk., 1902, iii, 49; 97; 3 pl.—**Orton** (F. H.) A porcelain crown. *Dental Rev.*, Chicago, 1902, xvi, 494-498.—**Otte** (J. A.) Multilocular cyst in the lower jaw. *China M. Miss. J.*, Shanghai, 1901, xv, No. 4, 258.—**Ottolenghi** (D.) Ricerche sperimentali sul trapianto della ghiandola salivare sottomascellare. *Gior. d. r. Accad. di med. di Torino*, 1902, 4. s., viii, 178-188.—**Ottolengui** (R.) Artificial dentures, with special relation to the impression, taking the bite, and articulation. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 481-493.—**Peck** (A. H.) Physical diagnosis as related to dental college curricula. *J. Am. M. Ass.*, Chicago, 1902, xxxviii, 1617-1619.—**Peron** (H.) Production de courants électriques dans la bouche. *Rev. trimest. suisse d'odont.*, Winterthur and Genève, 1902, xii, 91-93.—**Pettit** (E.) Die artikulation bei künstlichen zähnen. *Zahn-techn. Reform*, Berl., 1902, xxi, 103-105.—**Pfeiffli** (C. F.) Courants galvaniques et matières obturatrices. *Rev. trimest. suisse d'odont.*, Winterthur and Genève, 1902, xii, 81-91.—**Phillips** (W. C.) Symptoms pointing to the necessity for operative interference in mastoid suppuration. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 311-319.—**Pieniazek**. [Extraction of foreign bodies from the œsophagus.] *Przegl. lek.*, Kraków, 1902, xli, 145-147.—**Pinet**. Étude générale sur le chloroforme. *Odontologie*, Par., 1902, 2. s., xiv, 365-388.—**Pinet & C. Jeay**. Contribution à l'étude du somnoforme. *Ibid.*: 417-425.—**Piney**. A propos du chloroforme. *Ibid.*: 395-399.—**Pitts** (G. W.) Method of constructing a perfect-fitting dental clasp. *Dental Rev.*, Chicago, 1902, xvi, 508.—**Poirier** (P.) Le système lymphatique et le cancer de la langue. *Gaz. hebdom. de méd.*, Par., 1902, n. s., vii, 433; 457.—**Poncet**. Actinomycose temporo-maxillaire. *Lyon méd.*, 1902, xcvi, 793.—**Pont**. Trois cas de résection du maxillaire supérieur; quelques réflexions sur la prothèse consécutive. *Odontologie*, Par., 1902, 2. s., xiv, 427-429.—**Pooley** (T. R.) Empyema of the frontal and ethmoidal sinuses and orbital abscesses. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 71-76.—**Posthumus-Mexjes** (W.) Un cas de glandula thyroidea accessoria de la base de la langue. *Bull. Soc. belge d'otol.* [etc.], Brux., 1899, iv, 86-89.—**Preston** (C. H.) & **Campion** (G. G.) Some essentials of a good articulator. *Dental Rec.*, Lond., 1902, xxii, 261-268, 1 pl. [Discussion], 275-277.—**Prota** (G.) Fibrosarcoma della base della lingua. *Arch. ital. di otol.* [etc.], Torino, 1902-3, xiii,



- 31-41, 1 pl.—**Radtsikh.** [Suprarenal extract in rhino-laryngology.] *Med. Obozr.* Mosk., 1902, lviii, 310-319.—**Ravet.** Une nouvelle lampe électrique, exploratrice aseptisable. *Odontologie*, Par., 1902, 2. s., xiv, 431.—**Ravitch** (M. L.) Action of silver nitrate and chromic acid on chronic glossitis, under the influence of the electric current. *J. Am. M. Ass.*, Chicago, 1902, xxxviii, 1427.—**Reber** (W.) Grave injury to a dentist's eye during operative work. *Dental Brief*, Phila., 1902, vii, 301-304. [Discussion], 313-315.—**Regnier** (L. R.) & **H. Didsbury.** Nouveau procédé d'analgésie des dents par l'électricité. *Bull. gén. de thérap.* [etc.], Par., 1902, cxliii, 741-745.—**Renssen** (W.) Een tang voor de Schleich'sche inspuiting. *Med. Weekbl.*, Amst., 1902-3, ix, 89.—**Reschofsky** (H.) Beiträge zur zahnärztlichen Kautschuktechnik. *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1902, xviii, 261-281.—**Ribadeau-Dumas** (L.) Recherches sur les aspects de la cellule rénale du cobaye dans son acte sécrétoire. *Compt. rend. Soc. de biol.*, Par., 1902, 11. s., iv, 484.—**Richardson** (C. W.) Early treatment of mastoiditis. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 203-211.—**Richmond** (Cassius M.) [1835-1902.] (Obituary.) *Dental Cosmos Phila.*, 1902, xlv, 643.—**Robin** (P.) Strumentario e conchi di porcellana per preparare i pezzettini per otturazioni. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 161-165.—Nouveau traitement potentiel de la pyorrhée alvéolo-dentaire. *Rev. de stomatol.*, Par., 1902, ix, 240-243.—Un cas d'épithéliome médian de la lèvre supérieure chez l'homme. *Ibid.*: 243-246. [Discussion], 253.—**Römer.** Sui polipi pulpari dei denti. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 106-113, 2 pl.—**Röpke** (W.) Zur Kenntniss der Tumorbildung am harten Gaumen bei Pseudoleucämie. *Arch. f. klin. Chir.*, Berl., 1902, lxxvi, 334-346.—**Rohrbach** (J.) Ueberkappung der Pulpa mittelst Triformolpastillen. *Zahnkunst*, Bresl., 1902, vi, No. 17.—**Rose** (C.) In wie weit ist Ekströms Kritik an der schwedischen Sammelstatistik über Zahncaries berechtigt? *Deutsche zahnärztl. Zeitung*, München, 1902, No. 13.—**Ross** (G. T.) Papilloma of the epiglottis. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 295.—**Roy.** Un cas de fracture du maxillaire inférieur. *Odontologie*, Par., 1902, 2. s., xiv, 393.—**Rueda** (F.) Voluminoso quiste en la zona de la amígdala lingual. *Arch. lat. de rinol., laryngol.* [etc.], Barcel., 1902, xiii, 76-79.—**Rule** (F. H.) Inflammatory affections of the antrum of Highmore. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 443-449.—**Sanford** (L. P.) The dentist's duty to his patient. *Dental Cosmos*, Phila., 1902, xlv, 616-621.—**Schäffer-Schukert** (F.) Ueber die Frage einer Abänderung der Prüfungsvorschriften für Zahnärzte. *Deutsche zahnärztl. Wchnschr.*, Wiesb., 1902, v, 94-104.—**Scheff** (J.) Ueber die Wirkung des Nervocidins auf die Zahnpulpa. *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1902, xviii, 191-221.—**Schenk** (F.) Bemerkungen zur Pathogenie der Gangrän der Pulpa. *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1902, xviii, 221-228.—**Schiffers** (F.) De la sinusite maxillaire. *Bull. Soc. belge d'otol.* [etc.], Brux., 1901, vi, 63-82.—**Schürch** (O.) Neue Beiträge zur Anthropologie der Schweiz. *Schweiz. Vrtljschr. f. Zahnh.*, Winterthur und Genève, 1902, xii, 73-119.—**Scott** (S. R.) A case of severe internal hæmorrhage; a note on the bilateral swelling of the parotid and submaxillary glands during the intra-venous injection of normal saline solution. *St. Barth. Hosp. J.*, Lond., 1901-2, ix, 121.—**Searl** (A. C.) The value of definite methods in treating diseased pulps. *Dental Rev.*, Chicago, 1902, xvi, 477-479.—**Seitz.** Weitere Beiträge zur Chloräthylnarkose. *Deutsche Monatschr. f. Zahnh.*, Leipz., 1902, xx, 214-230.—**Senn** (A.) Acöin als Lokalanästhetikum in der zahnärztlichen Praxis. *Zahnärztl. Wchnschr.*, Hamb., 1902, xv, 186.—**Senn** (N.) Osteomyelitis involving the superior maxilla. *Med. Fortnightly*, St. Louis, 1902, xxi, 368.—Epithelioma of the lower lip. *Clin. Rev.*, Chicago, 1902, xvi, 178.—Relapsing carcinoma of the sub-maxillary region. *Ibid.*: 177.—**Signification** (La) du réflexe lacrymal pour le diagnostic différentiel entre l'anesthésie organique de la face. *Semaine méd.*, Par., 1902, xxii, 188.—**Smith** (A. H.) Histology of the maxillary and mandibular bones. *Dental Cosmos*, Phila., 1902, xlv, 549-559.—**Smith** (D.) Professional co-operation. *Austral. J. Dent.*, Melbourne, 1901-2, v, 203-207.—**Smith** (E. A.) The relation between the dentist and the surgeon. *Buffalo M. J.*, 1901-2, n. s., xli, 826-832.—**Staubert** (F.) A remedy for excessive space between the superior central incisors. *Dental Brief*, Phila., 1902, vii, 310-312.—**Stein** (O. J.) Leukoplakia buccalis, with report of case treated with X-rays. *Ann. Otol. Rhinol. and Laryngol.*, St. Louis, 1902, xi, No. 2, 183-186.—**Stucky** (J. A.) Chronic empyema of the maxillary sinus, operation and treatment. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 253-257.—**Struck** (W.) Zeit- und Streitfragen. *Deutsche zahnärztl. Wchnschr.*, Wiesb., 1902, v, 88-90.—**Szontagh** (F.) Adatok a prothrahal lefolyású gegécroup ismeretéhez. [Contribution to the knowledge of protracted croup of the throat.] *Gyermekgyógyászat*, Budapest, 1902, 14.—**Theissen** (C. F.) A case of accessory thyroid tumor at the base of the tongue. *Tr. Am. Laryngol., Rhinol. and Otol. Soc.* 1901, N. Y., 1902, vii, 297-302.—**Thomson** (G.) Dental reform. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 265-274.—**Thorpe** (B. L.) Biographical sketch. *John Greenwood, Surgeon-dentist to his Excellency, George Washington.* *Dental Rev.*, Chicago, 1902, xvi, 519-524.—**Townsend** (I.) Lymphoid hypertrophy: etiology and pathology. *J. Ophth., Otol. and*



- Laryngol., N. Y., 1902, xiv, 160-171.—**Trauner** (F.) Wurzelfüllung von Zähnen, deren Wurzelwachsthum nicht abgeschlossen ist. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 229-237.—Also: J. f. Zahnh., Berl., 1902, xvii, 67-70.—**Trzebicky** (R.) [Extraction of foreign bodies from the œsophagus by Græfe's apparatus.] Przegl. lek., Kraków, 1902, xli, 143-145.—**Turner** (A. L.) Some points in the anatomy of the antrum of Highmore. Dental Rec., Lond., 1902, xxii, 255-260, 9 pl.—**Valderama y Barrenechea** (J.) Taking plaster impressions of mouths in which the teeth form undercuts; a new method, securing governance of fracture. Dental Cosmos, Phila., 1902, xlv, 559-562.—**Vannelli** (V.) Di un tumore dell'antro d'Higmore del mascellare di sinistra. Gior. internaz. d. sc. med., Napoli, 1902, n. s., xxiv, 443-453.—**Vajna** (V.) A foggyökérsatornák kifurásáról egy új furóeszköz bemutatásával. [The reaming out of root-canals; a new reamer for the purpose.] Gyógyászat, Budapest, 1902, xlii, 308-310.—**Vichot.** Dédoublement du follicule des incisives centrales supérieures. Odontologie, Par., 1902, 2. s., xiv, 429-431, 1 pl.—**Vilga** (G. I.) [Odontology in forensic medicine.] Odont. Obozr., Mosk., 1901, iii, 481: 1902, iv, 1: 59; 137.—**Villar** (F.) Nouvelle observation d'extirpation du ganglion de Gasser. Gaz. hebd. d. sc. méd. de Bordeaux, 1901, xxii, 590-592.—**Vladimiroff** (G. E.) [Treatment of apthæ and cancrum oris.] Diëtsk. med., Mosk., 1902, vii, 54-56.—**Wachtl** (L.) Einige Mittheilungen über konservative Behandlung der Pulpitis acuta partialis purulenta. Zahnärztl. Wchnschr., Hamb., 1902, xv, 185.—**Wagner** (H. L.) Traumatic dislocation of the left arycartilage. Tr. Am. Laryngol., Rhinol. and Otol. Soc. 1901, N. Y., 1902, vii, 18.—**Walkhoff** (O.) Der Unterkiefer der Anthropomorphen und des Menschen in seiner funktionellen Entwicklung und Gestalt. Biol. Centralbl., Erlang., 1902, xxii, 298-310.—Contributo all'anestesia della dentina coll'acido carbonico. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 113-119.—**Wallace** (J. S.) The irregularities of the teeth. Dental Rec., Lond., 1902, xxii, 241-245.—**Wallisch** (W.) Galvanoplastik in der zahnärztlichen Technik. Oesterr.-ungar. Vrtljschr. f. Zahnh., Wien, 1902, xviii, 251-261.—**Ward** (M. R.) Acute lacunar inflammation of the tonsils. Tr. Am. Laryngol., Rhinol. and Otol. Soc., 1901, N. Y., 1902, vii, 116-120.—**Weber** (L.) Secondary hemorrhage on the fifth day after tonsillotomy. Laryngoscope, St. Louis, 1902, xii, 256.—**Wedelstaedt** (E. K.) An answer to the extension for prevention debate. [An answer to Dr. Ottolengui.] Dental Rev., Chicago, 1902, xvi, 479-488.—A brief consideration of seven conditions that bring about opportunities for the failure of dental operations. Brit. J. Dent. Sc., Lond., 1902, xlv, 433-443.—**Weiser.** Studi e contributi alla tecnica della chirurgia della bocca. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 119-139.—**Whiteis** (W. R.) Adenoids. Dental Cosmos, Phila., 1902, xlv, 574-580.—**Williams** (W. R.) Ether v. chloroform. Lancet, Lond., 1902, i, 1643.—**Wood** (W. C.) Some phases of local anesthesia. Brooklyn M. J., 1902, xvi, 289-293. [Discussion], 296.—**Young** (J. L.) Modern crown and bridge-work. Dominion Dent. J., Toronto, 1902, xiv, 213-233.

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING JUNE, 1902.

- June 3.—No. 701,616, to CLAYTON J. REYNOLDS. Dental tool for slitting cap-crowns.  
 " " —No. 701,671, to JOHN A. BILLINGS. Hypodermic syringe.  
 " " —No. 701,799, to WILLIAM CRENSHAW. Dental matrix.  
 " 11.—No. 702,073, to ERNEST O. PIEPER. Support and switch for electric dental instruments.  
 " " —No. 702,111, to JOSEPH C. OSBORNE. Artificial tooth crown.  
 " " —No. 702,276, to DANIEL A. BAKER. Closing and locking device for dental flasks.  
 " 17.—No. 702,394, to EDMUND N. BEALL. Rubber-dam holder.  
 " " —No. 702,645, to WILLIAM E. GRISWOLD. Dental impression cup.  
 " " —No. 702,646, to WILLIAM E. GRISWOLD. Dental tool.  
 " " —No. 702,805, to HENRY E. LINDAS. Dental appliance.  
 " " —No. 702,857, to WILLIAM E. GRISWOLD. Dental fastening and bridge-work.  
 " " —No. 702,871, to WILLIAM E. GRISWOLD. Securing device for dental bridge-work.  
 " 24.—No. 703,063, to FRANK F. HAWKINS. Dental bur.  
 " " —No. 703,221, to WILLIS E. ALLEN. Fountain spittoon.





*Alban V. Elliott*



# THE DENTAL COSMOS.

---

VOL. XLIV. PHILADELPHIA, SEPTEMBER, 1902.

---

No. 9.

## ORIGINAL COMMUNICATIONS.

### ORTHODONTIA AS A SPECIALTY.

BY EDWARD H. ANGLE, M.D., D.D.S., ST. LOUIS, MO.

(Read before the Alumni Dental Association of Tufts College, Boston.)

THE subject of my paper this evening is, "Shall Orthodontia be Divorced from the General Practice of Dentistry?" As far as I am aware this is the first time this subject has been presented for serious consideration before any dental society. Notwithstanding the fact that orthodontia is a vast subject, you all doubtless know it is rare indeed that members of societies can be induced to go deeper into its discussion than the consideration of the extraction of teeth, regulating appliances, and the reports of supposed "remarkable cases," and you know that even the literature of orthodontia is largely devoted to the consideration of regulating appliances, which is, in reality, but a small and very misleading phase of the great subject. There are other phases which must be seriously considered before this great branch, so grand in its possibilities for benefiting humanity, shall pass beyond its present much-neglected stage and the mere smattering of attention it is receiving, to become what it is destined to be.

Possibly you will say there is no need for the discussion of this subject; that orthodontia being a branch of dentistry it *must* be a natural and necessary part of its teaching and daily practice, and the two having come down to us hand in hand, as it were, so lovingly, having walked together so long, why separate them now? I shall attempt to show you that the two have not been congenial, and that their present relations are positively detrimental to both. I believe that each is thoroughly demoralizing to the other, seriously handicapping their mutual progress and best interests, and that there are the best of reasons why the practice of orthodontia should

be separated from that of dentistry, both operative and prosthetic,—reasons natural and potent, which must in time effect this result.

To the reasons I shall offer, many of you, perhaps all, will disagree. But I shall ask you to bear with me, as my conclusions have not been arrived at hastily, but after the most mature deliberation, following an intimate relation with members of the profession, both personally and through an extensive correspondence; diligent study of the literature; years of experience as teacher in several of our large dental colleges, and observation, also, of the manner in which orthodontia is taught in several European countries.

According to our literature it is now three hundred and fifty-six years since we began the practice of orthodontia. Its history reads like a romance, and is exceedingly interesting,—showing, as it does, the wonderful unfoldings which have taken place in every phase of the subject. Its history is similar to that of most sciences in that crudity and ignorance are gradually being eliminated and supplanted by skill and correct principles, until to-day we can with truth say that the science of orthodontia has attained a high degree of perfection. The subject has been broadly studied, the etiology has been ably written up, and the state to which the regulating appliances have been brought is probably very nearly perfect; so that with our present knowledge of the science it is possible, by beginning at the proper age, to bring about truly wonderful results, even in the worst cases.

Cramped and narrowed arches are now easily enlarged and made to assume that graceful form best in harmony with the peculiar facial type of the individual; twisted, inlocked, or outlocked teeth are made to quickly yield to the intelligent application of force and to assume positions of usefulness in the lines of beauty. In those unfortunate cases commonly known as prognathism and orthognathism the dental arches may be restored to normal relations by movement backward or forward until lines of facial harmony have been established; and lastly, and more important than all, the teeth may be brought in harmony with that great law which is the basis of all dentistry, namely, correct occlusion. Without this no artificial denture, filling or corrected case of malocclusion was ever yet a real success, for the establishment of perfect occlusion means the establishment of harmony throughout.

And yet, notwithstanding that orthodontia has kept pace with other sciences and other branches of dentistry, making all this possible, to the vast majority of the profession orthodontia is still a sealed book, and I am compelled to ask the humiliating question, Why do so few understand it or intelligently practice it? Why is so little of this work done? Go where we will, wander down the village street or the great avenues of any city, enter street cars, or schoolrooms, or great churches, or theatres, or go wherever humanity congregates, and we will be confronted by these deformities until we are shocked by their prevalence. They occur in such numbers that they seem to be the rule rather than the exception, and in the mouths of many who would otherwise be regarded as beautiful, for you know how important a part the mouth plays in making or marring the lines of beauty.

Considering the great benefits possible, why is so little of this work done? Why are so many doomed for life to bear these afflictions, for afflictions they truly are, in some cases most serious. Who can measure the evil effects of malocclusion? That we can only surmise, but we do know that in proportion as malocclusion exists so is the beauty of the face of each individual marred, the usefulness of the teeth impaired, and articulate speech affected. Who has not seen the effect on those of refined, sensitive natures who are suffering from malocclusion? Who knows how many beautiful voices are impaired or forever doomed to oblivion as a result of malocclusion? Dr. Bogue has well said that the matchless voice of Patti would never have been heard had she been afflicted with malocclusion.

That all this is true conveys to me a feeling of sadness, especially as I know that many of these patients are fresh from the hands of dentists, and that a little intelligent attention early in life would have prevented at least ninety-five per cent. of these troubles. Why is this? Does it not seriously reflect on the present relations of dentistry and orthodontia? There must be something wrong somewhere. It is not so in other branches of dentistry, for, it has seemed to me, some of these,—crowning for example,—have been sometimes overworked. But why should orthodontia, the most fascinating, both in its study and practice, and the most gratifying in its results of all the different branches of dentistry, be so slighted? Certainly it is not lack of material, and I believe there is no work which brings such gratitude and appreciation as a successfully conducted case of malocclusion, not alone from the patient, but from a large circle of the friends and acquaintances. I know there is a cultured and refined class of people in every community who are willing to pay well for intelligent efforts in this branch of dentistry, and yet of these only the merest fraction ever receive that care and attention which an intelligent appreciation of their true condition deserves.

That this is true I think many of you will agree, and there must be a reason for it. Cause and effect always go hand in hand, and surely here cannot be found an exception.

Now, the fact is that the dentistry of to-day embraces so much in theory, as well as in practice, and so many different lines where a high degree of skill is essential to real success, that no one man can longer hope to be proficient in all. No one mind is great enough to master it all. Michel Angelos are few, and the all-around dental expert now lives only in history. Once the physician was supposed to be mighty in everything, but now the multi-specialist is justly regarded with suspicion, and is classed with the Jack-of-all-trades, though since the specialization of medicine in the last few years more real progress has been made than in all the long centuries preceding it. This was but natural and necessary to a more perfect knowledge of the wider unfoldings of the science. And this progress due to specialization is not limited to medicine. See how other branches of science are developing along lines of specialization, as for example chemistry, engineering, law, etc.—a real and



natural necessity in their great march toward the culmination of their greatest usefulness and highest possibilities.

For the teaching of dentistry nowadays we must look to the dental colleges, which have broadened and improved their curricula and are doing excellent work along many lines, but let us consider for a few moments what is being done for orthodontia in these institutions. Now I do not know how thorough is the teaching of orthodontia in your alma mater, but I do know that in a very large percentage of schools in this country it is of the most superficial character, being made secondary, both in teaching and appointments, to all else in the school, and that students on leaving college usually possess about as accurate a knowledge of orthodontia as of astrology, for the teaching is usually without system and has been truly said to "begin nowhere and to end nowhere." I do not know that colleges or teachers are to blame for this, at least not wholly, for orthodontia is so peculiar in its requirements and so unlike other branches of dentistry that in fact I am in doubt whether it is possible to meet them with the present plan of dental education,—for reasons, too, which seem to me most natural. It is true that it is now popular in the annual college announcement to show among the profuse illustrations a picture representing "a corner in the orthodontia room"; but all know that this is only a corner of the operating room, or mechanical laboratory, or technique room, where confusion and interruptions are inevitable, instead of an exclusively appointed room with every convenience essential to the careful study of this, the most difficult branch to teach and master in the whole institution.

There is another reason. Students do not go to college to learn orthodontia. Many of them perhaps never hear of this branch until they enter the halls of the college. It is often, therefore, a disappointment and a new and unforeseen difficulty to them. Their object seems to be, largely, to pursue the study of operative dentistry. Even in mechanical industry you all know how difficult it is to get them interested in study sufficiently to acquire a mere passing grade. Orthodontia they regard as in no way a necessity to their success in dentistry, so it is difficult to awaken that keen interest so necessary to efficient study, and upon graduation they usually possess but the most superficial knowledge of this great branch universally agreed to be very difficult of acquirement. Now, of all knowledge gained in dental colleges a smattering knowledge of orthodontia is of the least use. I believe such knowledge, besides being of practically no benefit, is more often positively harmful. Its effects in practice are far-reaching, and as lasting as they are noticeable.

There is another reason, namely, that the student's time is now so crowded with the large number of studies necessary in the broadened curriculum that it is impossible for him to give the time to this very exacting study that is necessary to its intelligent comprehension and mastery, even if he feel so inclined. Besides, he is not old enough; his mind has not sufficiently matured to grasp the importance of the work, to comprehend its difficulties, and to patiently and persistently overcome the obstacles of the large variety

of cases necessary to a broad and intelligent judgment and to the requisite skill.

And finally, another reason is that only a small percentage of students have the ability, plus the aptitude and liking for the branch, to ever possibly become at all proficient in it. I believe it to be quite as absurd to attempt to teach all dental students orthodontia with the expectation of their becoming proficient as it would be to expect them all to become finished musicians if they were taught music.

Now, with such existing conditions, is it any wonder that orthodontia is regarded as more or less of a nuisance to a daily general practice? or that the practitioner avoids the work or reluctantly undertakes the treatment of cases? or that the very erroneous and pernicious advice to "let the teeth alone and nature will straighten them," or to "wait until the patient is twelve or fourteen years of age before beginning treatment," is often given? or that that most baneful and inexcusable practice of extraction of teeth as a supposed means of preventing or relieving crowded conditions of the arches is resorted to? or that the public has grown to believe that these deformities are almost afflictions of Providence to be patiently borne? or that treatment, if undertaken, is a long, painful experiment of doubtful result? Hundreds of dentists have told me they dreaded the work and avoided it whenever possible, and one man said he had as soon see his satanic majesty coming as a case of crooked teeth.

Is this not natural? For the more busy the general practitioner becomes, the less time and attention he has to devote to orthodontia, the less he is in touch with the work, and the more distasteful it becomes to him. One branch or the other must suffer, and it is usually orthodontia. Now, of all dental operations those of orthodontia admit of the least neglect. Each obstacle should be promptly recognized and as promptly combated, for at best they are protracted operations, and if temporized with and unnecessarily prolonged, as they often are, discouragement and failure are inevitable. I need not remark on the result of these failures, nor the wide circle of comment they occasion, nor the reaction upon the dentist. Orthodontia is too broad, too complex, too intensely exacting in its requirements to be made to occupy a position second to all else, both in dental schools and in practice. It is a great world within itself, ample for the life's work of the brightest minds. It is entitled to the first, the best, consideration, and only under the best environments will it thrive and become what it should be,—a most useful specialty in medicine. In proof of the fact that it is difficult to master, you have but to stop and consider how few have ever been regarded as truly successful in its practice, yet in other branches competent men may be found in abundance.

What is the remedy for all this? Simply teach and practice it as a specialty,—for a specialty it is, having boundary lines as clearly defined as any in medicine, and he who practices it should study it broadly, thoroughly, in all its phases. He must love and cultivate

art broadly, but especially as pertaining to that highest type of art, the human face. He must be enthusiastic; he must be thoroughly sincere and truly in love with his work; he must have high ideals and the energy to strive for the best only: then, and only then, will he be able to meet and combat the difficulties of orthodontia promptly, easily, and bring about results which are impossible and unknown to those consuming their best energies along other lines of dentistry, with an occasional experiment in orthodontia.

As a specialty see what a grand future there is for orthodontia. Not a single specialist in all Europe, where there are thousands of the most wealthy and cultured people willing and anxious to pay for the best. Think of Chicago, with two specialists to two millions of people, with hundreds of dentists daily evading the work, and many other large cities, even this city (Boston) and Philadelphia, wholly unrepresented.\* Every city of twenty thousand inhabitants should have at least one able specialist profitably occupied. I know that the people take most kindly to this work as a specialty. I believe the time and conditions are ripe for the establishing of orthodontia in its true position, for I know there are to-day many of the best men in the profession in every city who would be willing, if they could, to refer their patients to honest, competent specialists *if pursuing this branch only*, just as does the broad and liberally educated practitioner of medicine who now takes pride in referring his patient to the carefully educated oculist or rhinologist or neurologist, and who by so doing uplifts his profession and benefits humanity.

## ROOT-FILLINGS AND THEIR RELATIVE VALUE.

BY LEO GREENBAUM, M.D., D.D.S., PHILADELPHIA.

(Read before the New York State Dental Society at Albany, May 14, 1902.)

THE invitation of your president, Dr. John I. Hart, to prepare a paper for this society met with ready acceptance on my part because I very well knew of your fraternal feelings, and desired to reciprocate them. As the time approached, however, for collating the substance of the paper I appreciated difficulties not before apparent. The preparation of a paper is one thing, the offering of something useful and original is quite another.

Being engaged as teacher in examining into the value of new drugs, and also new modes of therapeutic treatment, it occurred to me that it might be well on this occasion to present some conclusions I have arrived at concerning a few drugs and their action. If not distinctly original, perhaps some of you may find certain features of this offering useful.

Medical journals are replete with reports of cases concerning the uses of adrenalin hydrochlorid. Some of these are laudatory to a very high degree. From an extended use of the drug in the clinic of the Philadelphia Dental College I am unable to offer sup-

\*So far as I know, only Detroit, St. Louis, and Chicago are as yet represented by men devoting their exclusive time to the practice of orthodontia.



port to a spreading belief that this agent will supersede every known drug employed in the local arrest of hemorrhage. In such highly attenuated solutions as one in one thousand and one in five thousand it exercises appreciable contractile effects upon capillary vessels, making it a useful drug in many cases; but it does not give promise of promptly checking hemorrhage occurring around a tooth.

The acetate of eucain, although not so universally lauded as the preceding one, has received numerous indorsements as possessing such non-irritating qualities as would enable it to outrank as a local anesthetic the eucain hydrochlorid. I procured this drug from the European manufacturer, and after faithful trial found that it possessed the same objectionable features as the former salt of eucain, *i.e.* causing swelling of the parts into which it has been injected.

These negative results discouraged me so far as gaining material for the promised paper was concerned, until on investigation the different methods of root-canal treatment I obtained results which, to my mind, were of sufficient importance to be presented to the notice of this body.

The subject of root-canal treatment is not new, but it is of vital interest to every practitioner. The severest application of modern antiseptis has been made in the treatment of pulpless teeth. Recognizing the difficulty attending the complete removal of organic tissues from root-canals and the decided liability to sudden septic changes involved in their retention, almost every known antiseptic has been introduced into pulpless teeth; and the following modes of treatment have been suggested in the hope of successfully eliminating a predisposition to septic changes after devitalization. The success attained in this direction is still far from being what we should like it to be; therefore, any new suggestions should at once attract the attention of the profession and receive serious consideration.

Of all the materials which have been employed in root-canal fillings at one time or another the profession seems finally to have decided in favor of gutta-percha and zinc oxychlorid. About ten years ago Dr. Callahan, of Cincinnati, Ohio, introduced his sulfuric acid treatment; and upon careful reflection it becomes quite evident that it represents the only advance made in root-canal therapeutics in the twenty-five years ending with its presentation. Too much praise cannot be given Dr. Callahan for his method, and the ready and general acceptance accorded this mode of practice bears sufficient testimony to its merit.

A few years after Dr. Callahan made known his sulfuric acid treatment, Dr. Söderberg, Sydney, Australia, introduced a method of root-canal treatment comprising, in part, new features. Recognizing the great difficulty in many cases attending the removal of pulp-filaments from attenuated and tortuous canals, Dr. Söderberg evolved the plan of removing as much devitalized tissue as he could, and placing in the canals a paste purposely compounded to so affect the remaining organic substances in the root-canals that they should undergo mummification and hence present unsuitable soil for bacterial development. Dr. Söderberg's paste consists of desiccated alum, thymol, glycerol, and zinc oxid.

The remarkable drying power together with the high antiseptic value of formaldehyd, makes it a very valuable addition to Dr. Söderberg's mummifying paste. The formaldehyd has a hardening power upon the paste itself, which is decidedly advantageous, as it insures retention in place.

More recently another method, fathered by Dr. Harlan, has been added to the list. This is known as pulp-digestion. It is the application of papain to the devitalized and gangrenous pulp.

The following experiments were made for the purpose of obtaining some idea of the relative value of these principal methods. In order to obtain a proper standard of comparison the most favorable conditions of aseptic root-canals were produced by selecting normal teeth with accessible roots, two canines and three centrals. The pulps of these teeth were devitalized, every detail of the operation being conducted under the strictest antiseptic precautions. All instruments, the rubber dam, and the hands of the operator were treated in accordance with the most modern knowledge of aseptic requirements. The clinic of the Philadelphia Dental College offered the necessary teeth for the experiments, and I had no hesitancy in justifying the act upon the basis of "means to an end."

After the pulps were devitalized the canals were filled with chloro-percha and gutta-percha points and the cavity filled with zinc phosphate. After six weeks the teeth were opened under antiseptic precautions, and the contents of the canals placed in culture media. The results were negative,—no evidence of bacterial growth.

The second series of experiments were conducted with teeth in which canals were treated with sulfuric acid. These cases were selected,—three containing recently devitalized pulps and three putrescent pulps. The treatment was that which is generally followed, 50 per cent. sulfuric acid being used, afterward neutralized with sodium bicarbonate. This was continued until it seemed that the apex had been reached. The canals were then filled with chloro-percha and gutta-percha points. The aseptic precautions here, as in all subsequent experiments, were like those before cited. After three months these teeth were removed, the canals opened, and bacteriological examinations made. There were negative results, except in one of the putrescent cases which showed evidences of pyogenic micro-organisms.

The third series of experiments involved the use of mummifying paste. Six recently devitalized pulps were selected, and the result in two cases showed the formation of pyogenic micro-organisms. In one of these two cases the root-canal contents upon removal were found to be very foul. The tooth was removed owing to trouble and the desire for examination, and it was found that the mummifying influence had not penetrated beyond one-third of the distance of the root-canal.

The fourth series of experiments were conducted with the method of digesting the root-canal contents. In place of papain, as suggested by Dr. Harlan, the analogous substance "caroid solvent" was substituted. The reason for this change was the greater efficiency of caroid, and the ease with which it could be used, as there was no necessity for making a paste.

In six cases, immediately after devitalization and partial removal of pulp, caroid solvent was sealed in the pulp-chamber, which after twenty-four hours opened and washed out with solution of sodium bicarbonate and filled as in previous experiments.

In six other cases containing putrescent pulp tissue a few drops of caroid solvent were introduced by means of a pipette, sealed in the cavity with temporary stopping, and after two days washed out with alkaline solution; root-canals filled as before. After three months the root-canal fillings of all these twelve cases were removed and presented for bacteriological examination. Results were negative in all but one case, which showed bacterial growths. All of these experiments were conducted under the supervision of Dr. O. E. Inglis. The personal equation may therefore be eliminated and the conclusion drawn that thorough removal of root-canal contents under absolute aseptic conditions offers the best means of preventing subsequent septic changes.

Furthermore, we may conclude that we possess in the "acid method" and "pulp-digestion" two methods of root-canal treatment which may be employed with advantage in all cases where thorough removal is impossible; caroid solvent being preferred on account of the ease with which it can be used, its non-irritating property, and its power of penetration.

A few words about this agent. Caroid is a vegetable digestive obtained by mixing the ferments of the plant *Carica papaya* and the fat-splitting ferment of *Colza*. According to extensive investigations by Prof. Chittenden this substance possesses marked power to dissolve organic substances; this effect is produced in acid, alkaline, or neutral solutions, and in the presence of many chemicals, antiseptics, and therapeutic agents; it exerts its peculiar power at a wide range of temperature and irrespective of changing media or environments. Caroid as a solvent of dead organic tissue has recently been used quite extensively for the removal of hardened and tenacious secretions in the naso-pharynx and also the false membrane of diphtheria.

In order to supply the profession with a stable solution the manufacturers have prepared a saturated solution of caroid in a menstruum which prevents its deterioration, calling it "caroid solvent."

The laudatory articles which appeared in medical journals suggested the use of this liquid as a substitute for papoid in the treatment of root-canals, and the surprising results obtained during the first series of experiments induced me to use it in a large number of cases of putrescent root-canals which presented themselves in the college clinic. I have the record of eighteen cases, but not wishing to weary you with a recital of these, will simply state that the good results obtained from the use of caroid solvent, the ease with which it can be applied, the penetrating power of this digestive upon all organic tissues present in the root-canal and dentin, giving to the latter a whitened appearance as though it had been bleached, demonstrate the usefulness of this method of treating root-canals.



## "EXTENSION FOR PREVENTION."

BY R. H. HOFHEINZ, D.D.S., ROCHESTER, N. Y.

(Read before the New York State Dental Society, at Albany, May 14, 1902 )

SEVERAL decades ago Drs. Varney and Webb practiced and taught what Dr. Black has so happily termed "extension for prevention." Dr. Black has never claimed the originating of this method, of which Dr. Webb says, in his chapter on Contouring: "In the preparation of a cavity within the approximal walls of enamel of a bicuspid or molar, enough of the tissue toward the buccal, palatal, or lingual wall must be cut away to free the edges, thus enabling the operator to so restore the contour of the parts and so finish the filling as to keep the margins of enamel from contact with the tooth adjoining."

Some of his able but over-enthusiastic followers have forgotten this immortal chapter in dental history, to which Dr. Rhein called attention in discussing Dr. Ottolengui's paper at Brooklyn. Dr. Webb, however, applied this theory to contour work only. He took the same infinite pains to fill a one- or two-millimeter cavity on an approximal surface of a bicuspid or molar that he bestowed upon the large contour fillings.

Drs. Webb and Varney recognized the mechanical and chemical necessity of excavating in such cases to the utmost limit. Dr. Black, with his microscopic vision and scientific mind, has applied the theory to approximal cavities of minor size. He has, however, nowhere requested us to cut a cavity of one or two millimeters into one of five or six, to prevent recurrence of decay, regardless of conditions, as some of his followers have done. He has nowhere recommended, as he himself says, "the cutting away of teeth to any such extent, except in cases where the burrowing of neglected decay has removed the supporting dentin and weakened the enamel, and this, together with imperfect closure of developmental grooves, has rendered them especially unsafe."

What is "extension for prevention"? The extension of cavity margins toward the areas that are self-cleansing or are protected by gum tissue.

Are all areas which are self-cleansing absolutely immune against decay? No. Why should we have labial, buccal, and numerous lingual cavities, if immunity were absolutely certain upon these surfaces? To call any of these surfaces immune seems to me, at least, a doubtful application of the term. The immunity is always relative, the same as is the permanence of any dental operation. The question of acid production by bacteria *in situ*, "bacterial plaques," as the only factors of enamel decay, is not settled. (Miller, DENTAL COSMOS, 1902, p. 426.) I must confess that I have not seen decay under healthy gum tissue. Others claim that they have even observed it there, which would leave us no surface of immunity.

I saw a patient a few weeks ago for whom I filled a distal approximal cavity in a first bicuspid fourteen years ago, according to the record [passing models]. The dimensions of the filling were, as nearly as I could measure, in the mouth, two and one-half

millimeters bucco-lingual, three millimeters occluso-lingival. The distance between the gingival margin of the filling and the gingival margin of the tooth was about two millimeters. The second bicuspid, when I saw the patient, was largely decayed, a thin buccal and lingual wall remaining, with pulp nearly exposed. It must have required from one to three years, at least, for that amount of decay to take place. After excavating this tooth I carefully inspected the filled tooth, and it showed not a trace of recurrence of decay, in spite of the fact that it was not self-cleansing, living as it was in the most dangerous surroundings possible for enamel. Why has this filling lasted, when others of the same size, under much more favorable surroundings, have failed?

It was not upon an immune area; it was surrounded by destructive influences and conditions, yet it could not have been better preserved under any circumstances. It is one of the many instances that comes under our daily observation. What does this prove? An extraordinary piece of operative dentistry? A surface free from deleterious contact? No. It has shown an immune surface under the most disadvantageous conditions; it has shown that immunity is anywhere possible in some mouths, while others present no surfaces of immunity anywhere.

There can be no question in the mind of any intelligent and observing operator that the large approximal gold fillings have a greater longevity than the smaller ones under precisely the same conditions. What remains for us to definitely decide, when a case presents itself, is this: How much extension for prevention is justified?—how much must we cut for the real benefit of the tooth, how much for theory?

To extend the smallest, say one millimeter, cavity into one of seven by five, gingivally (bicuspids), in all cases, would mean the sacrifice in dentistry of conservatism, which, to say the least, is the foundation of real and sound progress.

If this be meant by extension, why should we not anticipate the possibility of decay and fill all surfaces exposed most readily to decay, before it has taken place? Why should we not term that "prevention from extension," and base the future of operative dentistry upon that pinnacle of radicalism. There is but a slight difference between the one and the other.

We must not forget that sound teeth, of good structure, are certainly better than the same teeth filled. A small approximal cavity, well filled, is about equal to the sound tooth, unfilled; the chances for recurrence of decay are not necessarily greater than they were primarily.

The question of extension for prevention has numerous stand-points from which it must be intelligently considered:

- (1) Environments, with special reference to the chemical composition of the oral fluids.
- (2) Age of the patient.
- (3) Prophylaxis.
- (4) The enamel rods and their relation to the cavity margins
- (5) Esthetics.

1. *The oral fluids.* If on proper examination the oral fluids show a preponderance of acidity, it is my belief that gold fillings are entirely contra-indicated. A mouth of such abnormal physiological presentation should never have its teeth filled with gold, least of all with large, laborious, expensive, and showy fillings. Such mouths are only fit to receive plastic fillings, until the environments have changed.

2. *Age of the patient* must dictate, very much, whether an extensive amount of excavation should be made beyond the normal decay. It is most essential in youth, and yet there are numerous arguments that speak against it, particularly the one of esthetics, which we will consider later. The relative proportion of organic matter makes the tooth less safe for extensive gold work than in the adult. The question of greater susceptibility and greater conductivity places a decided limitation on extension.

3. *Prophylaxis.* Two questions we must ask ourselves in connection with this: (1) Has a mouth which is not kept properly clean, any self-cleansing surfaces? (2) In a mouth kept properly clean, will a smaller filling not last equally as well as one cut to the utmost extreme?

Distinctly developed cavities upon approximal surfaces have been kept from further developments of decay, in many instances, by proper prophylaxis; why not well-placed fillings of moderate size?

Is it not more scientific to teach our patients the imperative necessity of keeping their teeth scrupulously clean, than to give them a piece of operative work, with the tacit understanding of its infallibility?

4. The question of *enamel rods* in relation to extension for prevention has not been very thoroughly discussed as yet. Sylvester Moyer (DENTAL COSMOS, 1902, p. 183), read an able paper on the subject.

I have before stated that, in my opinion, sound teeth of good structure are better than the same teeth filled. We have, as a rule, no conception of the amount of fractured enamel until the dam is placed and the tooth assumes a degree of dryness, or when grinding specimens for the microscope. These fractures are always more frequent in the teeth of adults than in youth.

The line of demarkation in fractured enamel, the tooth otherwise sound, is between the parts marked off by this line [demonstrating], and it is usually at this place where incipient decay takes place. It is this very line which predisposes to decay in an otherwise sound tooth; it predisposes to a recurrence of decay in filled teeth. This line of demarkation is between tooth and fillings, and it is the tooth that fails whether the cavity be limited or extended for prevention.

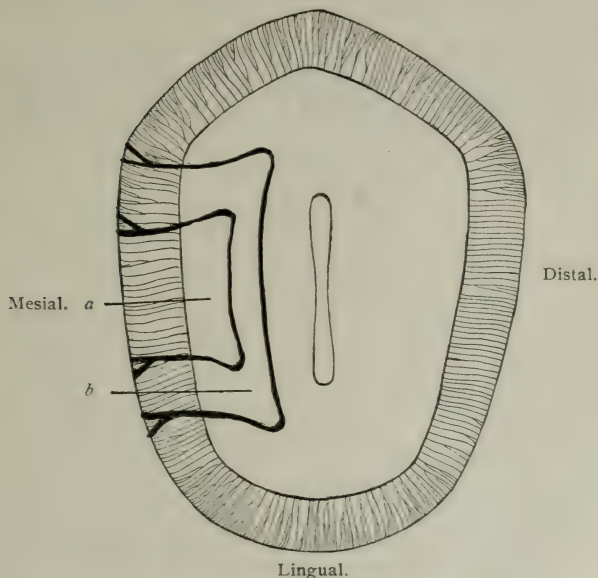
No matter to what extent, or in what direction, extension be made, no man is able to assure himself that he has not in such extension invaded imperfectly calcified districts in the enamel,—districts short of lime but redundant in organic matter; districts in which the enamel rods stand apart in places, or districts where the supplemental or peripheral rods exist in preponderance. We know that enamel is not uniformly distributed, but becomes thinner as the



neck is approached, ending at the cervix in a fine edge. The spaces between the outer or longer fibers, which are supported by the

FIG. 1.

Buccal.

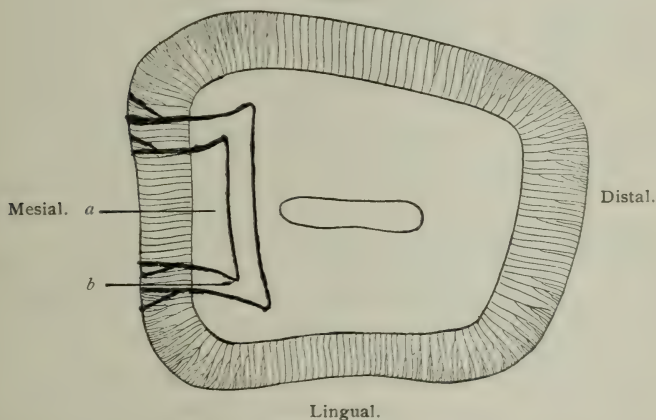


UPPER BICUSPID—MIDDLE OF CROWN.

*a*, cavity margin supported by long rods. *b*, cavity margin supported by small peripheral rods.

FIG. 2.

Labial.



CENTRAL INCISOR—MIDDLE OF CROWN.

*a*, cavity supported by long rods. *b*, cavity supported by small peripheral rods.

dentin, are filled with numerous peripheral rods, which extend but a short distance from the surface. Approximal surfaces are not

always convex, but often plane, which changes the contact-point very materially. We find the peripheral enamel rods most prevalent at the greatest convexity of the tooth, though they are found on flat surfaces, where, however, the rods are more liable to be single. The sharper the angle the greater the number of supplemental or peripheral rods.

A cavity the margins of which depend for their safety upon these short rods is certainly less secure than one dependent upon the long rods, which are strongly supported by the dentin. A filling buccolingually (bicuspid) from two to three millimeters in size would be dependent upon the long rods, whereas beyond that measurement the peripheral rods must be relied upon in relation to the convexity of the surface. A cavity upon the approximal surface of an incisor, gingivo-labio-lingually, of the size of one to two and one-half millimeters would be dependent upon the long rods, the small ones being beyond that amount of extension.

The question in connection with this fact presents itself to me thus: How much will the self-cleansing surface overbalance the insecurity which these short peripheral rods present as supporting-rods of the cavity margin? The extension to the gum line meets with a similar argument. The enamel,—the great support, the bulwark against decay in sound teeth,—assumes the thinness of a knife's edge at the gingival border. Under this thin enamel is the so-called borderland of calcification. A gum tissue, ever so carefully handled during the operation of extending beyond it, will never adhere to any filling with the same connective tenacity that it has shown when the tooth was in its proper physiological relation to that tissue.

5. The last question which remains for consideration is that of *esthetics*. We have for years preached that law. We have considered as the greatest compliment to our operative skill the hiding of all gold fillings in anterior teeth, and many of us have labored most successfully. We have developed the art of porcelain inlays to its present perfection as a natural outgrowth of our esthetic conception. Are we now to cut upon visible surfaces because they are not immune? Are we now to sacrifice that high ideal of beauty, "intact nature," because a time *may* come when the small gold filling has to be removed and replaced by one larger? It is our duty as esthetic operators to make use of every day that leaves nature's grand work free from the patchwork of human hands.

Time has not, as yet, answered the question, Which of the methods will save a tooth the longest,—filling, repairing, and a final refilling? or the extensive cut for prevention made at once, whenever a cavity of any size presents itself?

If the latter question were only left to men of such fine discriminating qualities as Dr. Black possesses, this paper would have had no reason for existing. When, however, some of our friends demand of all operators extension under all circumstances, regardless of environment and all other conditions enumerated, it is time to call a halt and specify what "extension for prevention" should mean in a conservative practice. Radicalism has never been in-

tended by Dr. Black, and it must never be put in practice by any of us.

There is a time for extension, and the conditions necessary for that must be carefully studied. There is a time for good old-fashioned dentistry, which must be observed with equally careful discrimination. Any one-sided manner of performing our operations is apt to narrow our vision and deprive us of that broad and comprehensive intellectuality which is so essential to the proper and complete performance of any professional duty.

---

## PORCELAIN ROOTS.

BY M. L. RHEIN, M.D., D.D.S., NEW YORK, N. Y.

(Read before the Northeastern Dental Association, October 31, 1901.)

THE agitation which has been started within the past few years to induce dentists to pay more strict attention to prophylaxis of the oral cavity is one of vast importance to the human race, to say nothing of its effect upon our specialty.

It is more than fifteen years since I appeared before the members of the Connecticut Valley Dental Society and presented a paper on "Oral Hygiene." At that time it was a very difficult matter to arouse the interest of individual members of the profession to the necessity of maintaining as nearly as possible hygienic conditions of the mouth. To-day the dawn of another era is at hand. It is now generally admitted that the preservation of the human teeth is dependent more upon a condition of cleanliness than upon the fillings placed in carious teeth. It is conceded that fillings inserted into such teeth possess but small preservative qualities if their environment be one of putrefaction with its attending bacteria. We have almost reached that stage of professional advancement where it is considered a crime to fill the carious teeth before placing the mouth in a condition of absolute cleanliness and instructing the patient how to co-operate with the dentist to maintain this condition. The time has arrived when the successful dentist must have a clearly defined and systematic manner of keeping the mouth free from every taint of sepsis.

To the men who have helped to agitate this apparently commonplace subject the world owes a large debt of gratitude. The vast number of teeth annually lost through diseased conditions of the periodontal membrane would be greatly lessened if the dentist would give his time and skill to maintaining as nearly as possible a normal physiological condition in the mouths of his patients. This necessitates the regular inspection of every mouth at appointed intervals, at which time the surfaces of every portion of the teeth should not only be entirely freed from all foreign deposits, but should be placed in as highly polished a condition as possible.

Nor is this sufficient. No patient should be dismissed as requiring no further attention if a pus-forming spot in the maxilla remains. It is difficult to estimate the vast number of cases of mild



septicemia originating in pus foci in the mouth. Latent alveolar abscesses, badly fitting crown- and bridge-work, decaying roots left in the alveoli, are directly answerable for some of the most incurable of diseases, because the physician has failed to trace the constantly lowering vitality to the continual absorption of pus and its irritating properties on the walls of the intestinal tract.

The lamentable ignorance of the average physician on all dental matters has greatly assisted in maintaining such unfortunate pathological conditions. Good physicians are often horrified when, by chance, their attention is called to the fact that their patients are daily swallowing large quantities of pus.

The time has arrived when the conscientious dentist must trace every drop of pus to its source, which naturally must be at once eradicated. In treating patients on such a logical basis, all forms of dental operation are necessarily brought into use, and consequently we cannot fail to see the absurdity of dentists speaking of the treatment of pyorrhea by specialists to whom they can refer cases and still hope to retain these patients for other dental operations.

For the benefit of those members of the profession who may not have given the subject sufficient attention, it may be well to state that the successful treatment of any of the serious types of what is known as pyorrhea alveolaris consists not only in the surgical and therapeutic treatment of the diseased peridental tissues, but includes every operation required in the mouth of the said patient. It may be advisable and valuable to have some of the labor performed by assistants and associates, always under advice and observation, in the same office. As soon as the patient is turned over to another practitioner in another office for treating this condition, he should become entirely the patient of the last practitioner.

It is on this account that the dentist who intends to undertake the care of such cases must learn to perfect himself in the most careful diagnosis of the environment of each particular tooth. This refers not only to external conditions, but more especially to the anatomical surroundings of each pocket; the depth thereof, and the amount of root-surface entirely free from attachment of soft tissue.

It is not within the province of this short paper to enter upon the broad field of treatment of the general forms of pyorrhea, but to consider those cases where all of the pericementum has been destroyed and entire absorption of the alveolus has ensued. If such conditions exist in single-rooted teeth they are necessarily at once cast from the mouth of the patient as foreign substances, with the result of entire cessation of the flow of pus at that point.

This result, however, does not follow in the multirooted teeth. Here one of the roots may reach the stage of absolute necrosis, losing its entire attachment on every side, and still the tooth be retained in position by the remaining root or roots having a fairly good attachment and being entirely free from any suppuration. In such cases no form of therapeutic treatment will succeed in stopping the flow of pus from the necrosed root. There remains only one cure,—operative interference. This consists of two forms,—

one the removal of the tooth itself, which is frequently a great loss and sacrifice; the other consists in amputating the necrosed root, and thus removing the dead portion of the tooth, leaving it supported by its remaining healthy roots.

This operation is one that should be preceded by a careful removal of the pulp-contents from all the canals of the tooth, which should then be hermetically sealed with a solid filling. It then becomes but a few minutes' work, with a sharp fissure drill, to cut through the necrosed root as close to the crown of the tooth as possible. It has been found that suppuration ceases immediately; that the hitherto loosened tooth becomes firm in the sockets of the remaining roots and regains a usefulness that is little short of miraculous in the eyes of the patient.

In this respect it is my desire to call your attention to the fact that many men who pride themselves that they remove such roots, and thereby greatly benefit their patients, frequently delay the operation, to the serious detriment of the patient. It is altogether too common a practice to go on treating such a tooth for months,—yes, even for years,—and leave the amputation to the time when every vestige of gum has disappeared from the root, leaving it entirely exposed to the eye. This is caused by the fact that the dentist does not give sufficient time for the proper and accurate anatomical diagnosis of the condition of the suppurating roots in pyorrhea alveolaris.

It is astonishing how often a thorough examination will disclose the fact that a thin-bladed burnisher can be passed around every side and across the end of the root from which the pus is discharging. In such cases, it is evident that the root is incurable and must be removed at once, or the tooth should be extracted. No surgeon of standing would tolerate for an instant the leaving for any length of time without interference a condition of this kind. Frequent procrastination has kept such teeth in the mouths of patients untreated, until a weakened condition has set in and other portions of the body have become infected. Consequently it is of the greatest importance in the treatment of pyorrhea alveolaris to carefully ascertain whether the roots of any of the multirooted teeth have become entirely dead, notwithstanding the fact that they may be more or less covered by gum. As soon as this is positively determined, the necrosed root must be removed.

After watching for years teeth which have had such roots excised, it has been apparent that after a certain period, the remaining roots are very prone to decay, caused by the difficulty of keeping them as clean as they should be. The removal of such a root is at once followed by the entire loss of substance in that portion of the alveolar ridge. It is very difficult to avoid in such cases the formation of depressions which act as natural receptacles for food débris, which is often hard to remove. Consequently while the operation is extremely beneficial in prolonging the usefulness of the tooth, it lacks the permanent durability for which we are constantly striving.

For many years, while removing necrosed roots from molar teeth which were still surrounded by gum (see Fig. A), the thought

entered my mind that if instead of merely leaving the stump of the crown in position a perfectly aseptic, non-irritating and imperishable artificial root could be attached to the stump of the crown, thus replacing the amputated necrosed root. This procedure would not only enhance the utility of the operation, but also would insure more durable results. This thought led to considerable experimentation, which finally resulted in the operation of replacing the amputated root by an artificial one made of porcelain.

It has been my practice, since performing this operation, to remove a necrosed root in the morning and immediately prepare from it suitable models and construct therefrom a duplicate made of high-fusing porcelain. This should be entirely finished by the same afternoon, so that the porcelain root should be attached to the tooth and placed in its socket within at least eight hours of the time of the amputation of the necrosed root, and before any of the space has been lost by contraction of the soft tissues.

The operation has long since passed beyond the stage of experimentation; in fact, the results have more than realized everything that could have been hoped for,—they have gone far beyond reasonable expectation.

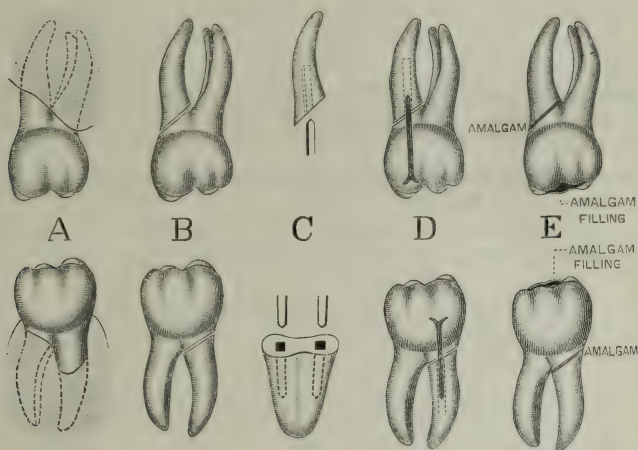
The necessity of removing the pulp some days before the operation makes a clinic of a case of this kind at a dental meeting a very difficult matter, unless the patient is prepared in advance and brought to the meeting. Some of the gentlemen present may have seen the patient presented before the Odontological Society in April, 1900, and, later, before the members of the Second District Dental Society of the State of New York, for a report of which you are referred to the *Items of Interest* of February, 1901. This case has circumstances of unusual interest attached to it, inasmuch as the operation in her mouth has been examined by hundreds of dentists in this country and in Europe. Last August I had the pleasure of exhibiting the porcelain roots in this mouth in Berlin, Germany, to about seventy practicing dentists in that city. The conditions at that time were most ideal. There had been positively no recession of the gum tissue from the porcelain root, and I feel that, in placing this operation before you at this meeting, I can safely say that it is not a temporary expedient, but rather an operation of a permanent character.

In all cases where this operation has been performed it has soon become evident that the gum tissue around the artificial porcelain root is much healthier in appearance than around any of the natural roots in the same mouth. This is due to the fact that the gum surrounding the original necrosed root has become entirely freed from the irritating effects of disorganizing bone-tissue, and has been allowed to contract firmly against the aseptic and non-irritating thoroughly fused porcelain. In all these cases there is generally more or less disorganization of the alveoli of the natural roots constantly going on; this is bound to result in some evidence of inflammatory nature in the surrounding gum tissues, and, as before remarked, it is entirely absent in the tissue around the artificial root.



With the strongest feeling of confidence in the utility of the operation, which a little practice renders very simple in an office accustomed to baking porcelain, I desire to make as clear as possible the technical detail of the steps in the operation of replacing the necrosed root by its porcelain substitute.

The pulp is entirely removed from all the root-canals, which are then permanently filled as far as the pulp-chamber. The main large opening in the crown should be filled with some temporary stopping that can be easily removed. The next step is the amputation of the necrosed root by means of a fissure drill revolving in the engine. (See Fig. B.) The patient is then dismissed for about four hours, and cautioned to keep the mouth as aseptic as possible by the free use of a suitable antiseptic wash.



The entire amputated root is now covered with a thin film of paraffin, in order to allow for loss of substance due to whatever root absorption may have taken place. The impression of the root is now taken in two parts, as it has been discovered that by baking the artificial root in sections, shrinkage of the periphery of the root is avoided, and a much better facsimile of the natural root is obtained. This is done by first taking an impression of about one-half of the root; articulating grooves are cut in this half, and the model of the other half of the root is made by pouring plaster over the first model, which has been previously varnished. The two parts are then separated and the root removed from the plaster.

In working by means of the electric furnace, two suitable pieces of platinum foil, having first been annealed in the furnace, are carefully burnished in the impressions of the sections of the root, and these form the matrices in which the porcelain is baked. The matrices are stiffened by baking a thin film of porcelain in them, and then reburnished in their original impressions. The baking of the root in two sections is now proceeded with in the same manner as if two separate porcelain inlays were being baked, care being

taken to avoid porosity. Around a square platinum pin, which is to anchor the root, is burnished a thin piece of platinum, the ends of which are soldered with pure gold to form a box. This platinum box which is to hold the pin that enters the crown, is placed in one section, which is not yet baked entirely flush. The pin should be held in the box while the porcelain body is being packed, and only removed just before this section is placed in the furnace, in order to prevent the box being damaged. The box should be left protruding beyond the porcelain in order to enable it to be more satisfactorily finished.

When the two parts are completely baked, the sides which are to come together are evenly ground so that they will form a perfect joint. The platinum is then stripped from the half not containing the box, and the surplus platinum of the remaining matrix wrapped around the stripped half in order to keep the two parts in perfect juxtaposition, the approximating sides having been previously painted with a thin film of fresh body. It is then placed in the furnace and the two parts fused together. All remaining platinum is now stripped from the root, and all protruding edges around the joint are ground away. The entire surface of the porcelain root is now painted with a thin film of body and placed into the furnace for the last time in an upright position, and the heat turned off just before the glazing state is reached. In broad roots, like the anterior roots of lower molars, two pins, and necessarily two boxes, will be found advisable. (See Fig. C.)

Everything is now ready for permanently anchoring the porcelain root to the natural tooth. The old socket is thoroughly washed with a warm antiseptic solution. The artificial root being placed in position, and everything being thoroughly dry, the box is filled with cement into which the pin is placed, having been passed through the crown cavity. (See Fig. D.) In this manner the pin engages the root in its proper relative position to the stump of the crown, and care should be taken to leave a space between one-thirty-second and one-sixty-fourth of an inch between the porcelain root and the stump of the crown of the natural tooth in order to have sufficient space for an amalgam joint. The crown cavity is now packed with suitable soft amalgam, which is forced between the artificial root and the natural stump, and this forms an hermetically sealed joint. (See Fig. E.) The gum in its efforts to shrink contracts tightly against the porcelain root, holding it firmly in position, and thus prevents the entrance of any extraneous matter. We have now replaced a disorganizing organic substance by an absolutely inorganic material, which cannot be acted upon by oral fluids.

In closing, it might be well to state that the bone of the maxilla is not reached in any manner, and the operation should by no means be confounded with any form of implantation, the root being held in position solely by the soft tissues in which it is imbedded.

## THE COMPARATIVE VALUE OF ORDINARY SEALINGS FOR ROOT-CANAL DRESSING AS EXCLUDERS OF BACTERIA.

BY A. E. WEBSTER, M.D., D.D.S., L.D.S., TORONTO, CANADA.

(Read before the New York State Dental Society, at Albany, May 14, 1902.)

**I**N presenting this subject I wish to say that there is no finality reached nor any positive conclusions arrived at. It is simply a report of progress gathered from a few pages of my experimental record-book.

The literature of the profession has but very little to say about how dressings should be sealed into cavities in teeth, or what material should be used. The fact is that it does not seem to have concerned the profession very much. Dr. Harlan says some strong things against sandarac and cotton in his lectures to the students of the Chicago College, and at one time he wrote an editorial in the *Dental Review* expressing such views. He recommends cement or gutta-percha stopping, while others with equal vehemence proclaim the virtues of sandarac and cotton. Dr. Head, of Philadelphia, recently said that bacteria would pass through either gutta-percha or cement.

In the *Transactions of the National Dental Association* for 1901, on page 210, appears a table which is a report on some root-canal fillings made in teeth out of the mouth. In the table appears the statement that some fillings were perfect and some were imperfect. The manner in which these conclusions were arrived at is not stated, but it is fair to suppose that if there were no holes in the fillings large enough to be seen with the naked eye they were reported as perfect.

So far as I have been able to find out there never was any scientific reason for the statements just quoted. I have not seen a report of any experiments which proved or disproved any statement that might have been made in this matter. The fact of the matter is that each dentist uses the sealing material that to his mind suits the purpose for which he puts it in. Some dentists' only reason for putting anything into a cavity in a pulpless tooth that they are treating is to keep the food out of it, so they fill it with plain cotton, while others, desiring to keep the saliva out as well, use sandarac and cotton; others, again, wish to keep something in the cavity that they have placed there, and exclude everything else, so they use cement. These reasons are all right as far as they go, but why treat a tooth at all if it be not the intention to exclude that which makes treating a necessity,—bacteria? The aim of the surgeon of to-day is asepsis rather than antisepsis, avoiding infection rather than disinfecting, preventing disease rather than treating it. So if it be the intention,—and it ought to be, except in certain cases,—to so seal a cavity that has been once opened for treatment as to absolutely prevent anything entering it from the oral cavity and at the same time to keep a treatment in the cavity, the sealing must be fairly firm, non-contracting, and impermeable to everything that may be found free in the oral cavity.

Assuming, then, that it is desirable and sometimes necessary to



temporarily seal a cavity in a tooth so that it may not become infected from the oral cavity, the question immediately arises, How shall this be accomplished, and what is the best material to use? There are so many complicating conditions in the mouth that the value of the sealings to resist the passage of bacteria must be tested in the laboratory. To do this in the laboratory the conditions must be as nearly as possible the same as exist in the mouth.

Glass tubes, about a quarter of an inch bore and two inches long, closed at one end and with a slight constriction about a quarter of an inch from the other, were filled with bouillon or beef broth up to the constriction and the open ends plugged with cotton. These were sterilized on three consecutive days. The cotton plug was then removed and the sealing or temporary filling put in the end of the tube, using ordinary care and cleanliness. The tubes were immediately immersed in a beaker of freshly collected saliva and placed in the incubator. At the periods specified in the following table the tubes were taken from the saliva and washed off, slightly nicked just at the neck with a file, and broken across, exposing the bouillon, three loopfuls of which were conducted and spread on a slant of agar-agar. This slant was placed in the incubator and afterward examined, and if a growth appeared a stained section was made.

After many infections occurred it became necessary to show that the organisms did actually penetrate from the saliva through the sealing to the bouillon in the tube, and did not come from an infection from the filling material or from faulty technique. This was demonstrated in two ways:

First: An organism that occurs in about 9 per cent. of all saliva and turns the media green (called *Bacillus pyocyaneus*) was isolated and identified in the beaker of saliva, and also isolated and identified from the bouillon in the tube.

Second: What is known as a control tube was kept, this being a tube carried through the regular process just as the rest, but not immersed in the saliva. In no case was the control tube infected.

All the tubes marked series A were put into the same beaker of saliva and carried through under the same conditions, and so with series B, C, etc.

#### GUTTA-PERCHA.

##### Series A.

Four tubes put into saliva.

In 24 hours 4 tubes tested. All infected.

##### Series B.

Four tubes put into saliva.

In 24 hours 2 tubes tested. Both infected.

" 48 " 2 " " " "

Saliva turned green and had a sweet clover odor. The slants had same characteristics.

##### Series C.

Ten tubes put into saliva.

In 24 hours 3 tubes tested. All infected.

" 48 " 3 " " " " Media green.

" 72 " 4 " " " "

*Series D.*

Ten tubes put into saliva.

In 24 hours	2 tubes tested.	Both infected.
" 48 "	2 " "	" "
" 72 "	6 " "	All "

## TEMPORARY STOPPING.

*Series A.*

Four tubes put into saliva.

In 24 hours	4 tubes tested.	All infected.
-------------	-----------------	---------------

*Series B.*

Four tubes put into saliva.

In 24 hours	2 tubes tested.	Both infected.
" 48 "	2 " "	" "

*Series C.*

Ten tubes put into saliva.

In 24 hours	3 tubes tested.	All infected.
" 48 "	3 " "	" "
" 72 "	4 " "	" "

*Series D.*

Ten tubes put into saliva.

In 24 hours	2 tubes tested.	Both infected.
" 48 "	2 " "	" "
" 72 "	6 " "	All "

## OXYPHOSPHATE.

*Series A.*

"Ames." Four tubes put in saliva.

In 24 hours	4 tubes tested.	All infected.
-------------	-----------------	---------------

*Series B.*

"Ash." Four tubes put in saliva.

In 24 hours	2 tubes tested.	Both infected.
" 48 "	2 " "	" "

"Weston." Two tubes put in saliva.

In 24 hours	2 tubes tested.	Both infected.
-------------	-----------------	----------------

*Series C.*

"Ash." Ten tubes put in saliva.

In 24 hours	3 tubes tested.	All infected.
" 48 "	3 " "	" "
" 72 "	4 " "	" "

"Weston." Ten tubes put in saliva.

In 24 hours	3 tubes tested.	All infected.
" 48 "	3 " "	" "
" 72 "	4 " "	" "

*Series D.*

"Ash." Ten tubes put in saliva.

In 24 hours	2 tubes tested.	Both infected.
" 48 "	2 " "	" "
" 72 "	6 " "	All "

"Weston." Ten tubes put in saliva.

In 24 hours	2 tubes tested.	Both infected.
" 48 "	2 " "	" "
" 72 "	6 " "	All "

## PLAIN COTTON.

*Series A.*

Four tubes put in saliva.

In 24 hours	4 tubes tested.	All infected.
-------------	-----------------	---------------

*Series B.*

Three tubes put in saliva.

In 24 hours 3 tubes tested. All infected.

SANDARAC AND COTTON.

*Series A.*

Four tubes put in saliva.

In 24 hours 3 tubes tested. All infected.

" 48 " 1 tube " Infected.

*Series B.*

Four tubes put in saliva.

In 24 hours 3 tubes tested. All infected.

" 48 " 1 tube " Infected.

BENZO BALSAM, VARNISH AND COTTON.

*Series A.*

Four tubes put in saliva.

In 24 hours 2 tubes tested. Both infected.

" 48 " 2 " " " "

OXYCHLORID ("AMES").

*Series A.*

Four tubes put in saliva.

In 24 hours 3 tubes broken, other not infected.

*Series B.*

Four tubes put in saliva.

In 24 hours 1 tube tested. No infection.

" 48 " 1 " " " "

(Other two broken.)

*Series C.*

Five tubes put in saliva.

In 24 hours 1 tube tested. No infection.

" 48 " 1 " " " "

" 7 days 1 " " " "

(Lost track of 2 tubes.)

*Series D.*

Five tubes put in saliva.

In 24 hours 2 tubes tested. No infection.

" 48 " 1 tube " " "

" 72 " 1 " " " "

(One tube broken.)

In a series not here reported there was no infection up to sixteen days.

STERILE VASELINE, COTTON AND THEN CEMENT ("ASH").

*Series A.*

Ten tubes put in saliva.

In 24 hours 3 tubes tested. Not infected.

" 48 " 2 " " Both "

" 72 " 5 " " All "

*Series B.*

Five tubes put in saliva.

In 24 hours 1 tube tested. Infected.

" 48 " 4 tubes " All infected.

*Series C.*

Five tubes put in saliva.

In 24 hours 3 tubes tested. No infection.

" 48 " 2 " " Both infected.

*Series D.*

Five tubes put in saliva.

In 24 hours 1 tube tested. No infection.

" 48 " 1 " " Infected.

" 72 " 3 tubes " All infected.



The experiments here reported do not represent all that has been done by any means. In some cases only a few experiments are reported as having been made as in plain cotton, but a great number have been made. Many tests of filling materials and root-canal fillings have also been made, but no tests as to the relative permeating power of different bacteria have yet been undertaken.

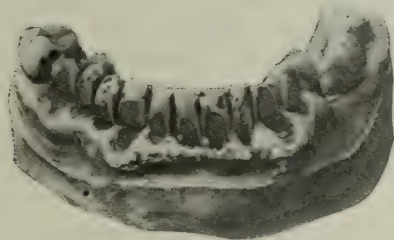
Before closing I wish to thank Dr. Garnet Trewin, demonstrator in the Royal College of Dental Surgeons, for very valuable assistance in carrying out these experiments.

---

## A CASE OF EROSION.

BY ROBERT S. IVY, D.D.S., SHANGHAI, CHINA.

CASES of erosion are of common occurrence in most busy practices, but one so extensive as that shown in the accompanying photograph is not met with every day. The surfaces where the erosion had taken place were hard and polished, and without sensation. With the exception of the two canines and the left first bicuspid apparently no actual decay, as ordinarily recognized, had occurred. In these three teeth the



dentin covering the pulp-chamber was slightly discolored with brownish decay which was easily penetrated by a sharp-pointed explorer, the pulp in each instance being dead. The canals of these were thoroughly treated, filled with gutta-percha, and sealed with cement. The right first molar had a large cavity on each approximal surface as well as the erosion on the buccal face. The portion of enamel and dentin separating the two cavities being cut away, the pulp, being exposed in the process, was devitalized, the canals treated and filled, and the cavity filled with alloy.

The operative treatment of the eroded surfaces consisted of retaining grooves being made in each tooth at the cervical margin and extending up each side to the upper part of the eroded surface; gold was then packed into the grooves and extended over the denuded surfaces in sufficient quantity to restore the necessary contour.

The festoon of the gum round each tooth was normal, and the general condition of the mouth healthy, the whole upper denture being complete with the exception of the third molars, which had never erupted in either jaw.

One of the peculiarities of the case is that the upper teeth exhibited no sign of erosion or decay, but were dense and of hard structure, and there was no sign of recession of the gums at any one point, or exposure of the cementum, as is usually observed in such cases.

The patient, a Russian gentleman, had experienced slight sensitiveness of the teeth round the cervical edge of the lower teeth about ten years previously to consulting me, but this had gradually disappeared, and his business as a mining engineer in an isolated locality had prevented his obtaining advice. Probably if the grooves had been filled when they first appeared the process of denudation would have continued, as is so frequently the case. Seeking for causes to account for the condition, inquiry elicited nothing satisfactory, but the theory so frequently advanced that abrasion of this character occurs from the use of the tooth-brush was entirely contradicted, as the upper teeth would have been in the same condition as the lower; beside which the patient informed me that he had not used a tooth-brush for fifteen years.

An interval of five years occurred between the two visits of this patient, and when he consulted me last it was to inquire "if anything else was going wrong." I found on examination that with the exception of the right first molar, which had broken down, and upon which I subsequently put a gold crown, the erosion had not extended in any one instance, and his upper teeth were as free from erosion and decay as when I saw him the first time.

---

## CORRESPONDENCE.

---

### JAPANESE DENTISTRY.

TO THE EDITOR OF THE DENTAL COSMOS:

Sir,—Permit me to add a few lines to Dr. Chiwaki's paper in the COSMOS for August.

I was the first resident American dentist in Japan. Before that time it had been visited by the late Dr. Eastlack, of Shanghai. I arrived early in 1870, remaining until late in 1875. My first student was Obata, who has been practicing in Tokyo from about 1873 up to the present time. He was an excellent operator. Only yesterday I saw gold fillings of his that had been in place for eighteen years, doing excellent service.

Obata had many students, and I believe that he always insisted upon his students obtaining their diplomas in America. He imported the first dental engine in 1873, and from the first had a large and lucrative practice. I might be permitted to add that I examined many Japanese papers, and finally found the product of a Kyoto mill to meet dental requirements. I shipped quantities of it to professional friends in America and subsequently supplied the market through The S. S. White Dental Manufacturing Company.

Dr. Chiwaki unfortunately does not mention the fact that Japan

was not only the first nation to make unattached dentures,—independent of natural teeth,—but also the first to use atmospheric (suction) plates. I have seen hundreds of plates made of wood,—no ivory or metal,—the teeth generally quartz, let into the anterior portion. Upon inquiry I found that no plaster was used in their manufacture; only a wax impression, chilled, and a wax model. The plate was carved by hand from the model, by the aid of *beni* or paint. The suction plate, so far as I could learn, dates back some two hundred years. Although unsightly they were perfectly practicable, and answered the purposes of mastication well.

I remember once a Japanese doctor visiting me and stating that his teeth were quite satisfactory. They consisted of a full upper and lower denture, and he had brought some candy with him to show me how perfectly he could masticate with his artificials. He wanted a foreign set, however, as his own were not good enough.

Very respectfully,

W. ST. GEORGE ELLIOTT.

NEW YORK, August 5, 1902.

---

## PROCEEDINGS OF SOCIETIES.

---

### NORTHEASTERN DENTAL ASSOCIATION.

(Continued from page 872.)

#### THURSDAY—*Morning Session.*

At the morning session Dr. HENRY C. BOENNING, of Philadelphia, read the following paper:

#### SUPPURATIVE PROCESSES INVOLVING THE MAXILLÆ.

As is known to all of us, these are exceedingly numerous and of the greatest possible variety. There are those that involve the sockets of the teeth without extending into the bone-substance; others associated with disease processes of the maxillæ proper; and still others that are located in the antrum, the nasal fossæ, and the parts associated with the maxillæ.

We may say for classification that they involve the maxillæ primarily; and, secondarily, by extension of disease from contiguous parts, the soft tissues and teeth.

Suppurative processes about the mouth are most frequently discovered first by the dentist, who, in his minute examination of the structures of the oral cavity very often detects a sinus which has escaped frequent examination by the surgical practitioner. It is on account of the special opportunities of the dentist to discover disease processes in and about the oral cavity that I have selected a subject in which the dentist and oral surgeon are mutually interested.

The kind of suppurative process that takes place in the maxillæ depends not so much on the tissue involved as it does upon the variety of micro-organisms concerned in the pyogenic process.



This is also a factor of much influence in regard to the rapidity with which the suppurative lesions proceed. For instance, those in which the germ is the staphylococcus as a rule extend over a long period, resulting in bone-softening, and often caries or necrosis from capillary obstruction; while the presence in profusion of the streptococcus often results in rapid obstructive and destructive changes, and extensive necrosis.

It is to be borne in mind that all suppurative diseases associated with the maxillæ are the result of the action of a pus germ; hence, dental calculus, once considered *the* cause of pyorrhea, is only a factor inasmuch as it causes irritation and opens the way for the intrusion of pyrogenic micro-organisms. Sanguinary or serumal calculus in itself is unable to cause the slightest pus-formation. The pus germ is necessary.

Certain suppurative processes, on account of their frequency and importance, claim the especial attention of the dentist and oral surgeon. Among such are pyorrhea alveolaris, alveolar abscess, and antral empyema; and these will serve to illustrate many other lesions of the maxillæ associated with suppuration.

We are familiar with the cause of pyorrhea alveolaris as far as it concerns a pyogenic germ, which may be introduced in an infinite variety of ways, as by the use of an infected toothpick, or an unclean instrument, or infected substances placed within the mouth. A deposit of calculus about the tooth proper, forcing away the soft parts, may enable the germ to enter the socket by infiltration. But we are unable at present to fix upon any specific germ. A rare event in pyorrhea alveolaris is to find *in the first instance* more than one socket involved. The sockets are infected consecutively,—it may be very rapidly,—and, as we have found by close inquiry and examination in such cases, with remarkable regularity.

A careful examination of the purulent discharge in pyorrhea shows great numbers of very active micro-organisms, and of several varieties. In greatest profusion is the staphylococcus, with colonies of streptococci in the form of twin spores, and up to the fully developed germ. These are of course associated with pus cells and detritus, plus bacteria and germs of fermentation. I herewith present cultures of a recent case. [Specimens submitted.]

On removing the tooth from its socket it is found as a general rule, in the lower teeth at least, that the action when at all extensive is most pronounced in the deepest part of the socket.

The examination of the bone *in the vicinity of the socket* gives very remarkable results. It often presents evidences of decalcification, associated more or less frequently with limited or diffused caries and necrosis. In explanation of these conditions and the difficulty of successfully treating pyorrhea, the alveoli of the cancellous bone-tissue in the vicinity of the sockets are usually found infested with colonies of pyogenic micro-organisms. In two recent cases which presented the opportunity for the removal of bone in the vicinity of these suppurative processes, the specimens were submitted to bacteriological examination and development, with the result of procuring perfect cultures of both the staphylococcus

and streptococcus in profusion. The presence of colonies of germs in the alveoli of the bone in all probability explains reinfection and recurrence of suppuration in pyorrhea, and other pathological conditions of the maxillæ associated with suppuration.

We have by patient treatment and attention entirely cured, apparently suppurative diseases about the maxillæ, notably alveolar abscess, only to find later on in some cases a re-establishment of suppuration. Even after thorough treatment of a tooth, and perfect and complete filling of the canals under the severest conditions of antiseptis, alveolar abscess sometimes recurs. As in pyorrhea alveolaris, so I have found, in some cases of alveolar abscess operated on, infiltration of pyogenic germs into the structure of the maxillæ. This same germ infection takes place in the substance of the tooth, and incidentally suggests the wisdom of thorough mechanical and surgical cleanliness of the root in stubborn cases of pyorrhea. Antral empyema serves as another notable example of a suppurative condition or lesion of the maxillary bone. But the pathology in all is essentially the same, viz, infection by pyogenic germs, followed by bone-softening associated with or followed by limited caries,—often necrosis.

Now a word as to the treatment we have found to give the best results in maxillary bone lesions associated with suppuration. First, and most important, is free drainage by an opening down to the disease, and sufficiently large, through which the micro-organisms and products can be discharged and destroyed, the dead bone and detritus removed, and the involved tissues treated by antiseptics and other agents required. It may become necessary, for instance, in order to save a valuable tooth in a case of pyorrhea, not only to wash out the socket at the cervical inlet, but also to open the socket above by means of a drill and the surgical engine, and in this manner secure complete and entire flushing of the involved tooth and socket. I followed this line of practice in several cases with good results; in fact, I was impressed with the rapidity of the reduction of pus-formation. The opening thus made in the cases referred to subsequently filled up and the teeth became firm.

In alveolar disease it has been for years my practice where conditions are recurrent, and apparently not remediable by the means ordinarily employed, to open into the socket with a large bur, by means of the engine, through the external alveolar plate, and cut away all soft and infected bone, and then destroy the germs with powerful antiseptics. I have found it necessary at times to bur away a rough apex or part of the tooth-root, as well as the bone involved. Of course all necrotic tissue found must be removed.

In antral empyema, which is unfortunately common, we have found the most successful treatment in chronic cases of suppuration to be a free opening through the anterior wall of the antrum. This we accomplish by raising the soft structure from the anterior surface of the body of the maxilla, and then by trephine or bur opening the antrum sufficiently to insert the point of the finger. We have often removed flakes of dead bone, shreds of tissue, also antral calculi, formed of mucus and pus, inclosing fragments of

bone and shreds of tissue. Generally such accumulations are of offensive odor, about the consistence of cheese; but in one case, that of a young man sent to us from Allegheny, Pa., the mass removed was irregular in form, of a grayish yellow color, and as hard as a piece of chalk.

A large opening through the anterior antral wall has many advantages. It does not involve the loss of a tooth; the operation is very simple; and it enables us to clean out the antral cavity thoroughly, and so treat it by irrigations and antiseptics and by careful packing as to secure its obliteration by granulation and new tissue formation; or such changes in the tissues are effected as to eradicate the suppurative processes.

At the Garretson Hospital we have had numerous cases of suppurative lesions of the maxilla which have been directly traceable to the hypodermic introduction of obtundents for the purpose of extraction. In many cases we have been able to develop the fact that no attempt was made on the part of the practitioner to secure oral sanitation prior to the introduction of the hypodermic needle.

I call attention to these cases because I think that suppurative lesions of the maxillæ are on the increase.

Of course it is a matter of the greatest importance to protect the individual against sepsis, and that not only the obtundent used, but also the instrument wherewith it is applied, should be sterile. And unless the tissues concerned in the operation shall be antisepticized all the former conditions will be futile.

A clean needle, thrust into or through gum tissue that has not been effectually cleansed, will simply carry any germs that may be on the surface, upon the point and opening of the needle, deeply into the tissue; and while the diseased tooth for which the obtundent was applied may be removed by the subsequent operation of extraction, the individual in reality is inoculated on account of a want of sterilization of the parts punctured.

Another factor in the etiology of suppurative diseases of the maxilla is a want of sufficient care of the mouth prior to and subsequent to the operation of extraction. Some of the most serious conditions associated with suppuration and necrosis of the maxilla that I have ever seen have been the result of lack of persistent oral sanitation subsequent to extraction. I think that these cases could be reduced to a minimum if the practitioner were to make the mouth surgically clean, if possible, prior to the operation, and then instruct the patient how to keep the mouth in that condition after the operation of extracting. And further, in order that his views on antiseptics should be carried out, would it not be well if the practitioner could see the extraction case regularly until all danger of infection was over?

There are cases that despite the most skillful and painstaking care of the dentist, and the most heroic methods of the surgeon, fail to improve, much less get well. What is to be done with these?

Within a relatively short time there has been largely developed, through the activity of independent investigators, a system of



animal therapy and the application of certain antitoxins to neutralize certain important soils in the blood and tissues in which the pathogenic organisms might grow.

At the Garretson Hospital we have had numerous opportunities, particularly during the last winter, to observe the effect of the application of staphylococcus and streptococcus antitoxins, and also the application of the various products of animal therapy, such as the extract of thyroid and suprarenal capsule, protonuclein, and other agents of that kind. We frankly confess that our results have not been noteworthy, save perhaps in one case, which may be of course purely coincidental; but if this case and others like it be prophetic of the results to be expected from the use of these materials, then all our methods as now understood for the treatment and care of suppurative lesions of whatever character, not only in the maxillæ, but all parts of the body, will be entirely revolutionized. In the case alluded to the practice was, as is usually our method, the injection of from 5 to 10 c. c. of Mulford's antistreptococcus toxin. In this case, which had extended over a period of years, the result was apparent, prompt, and satisfactory, inasmuch as the pus-formation rapidly diminished and almost entirely ceased. I mention the case without further comment.

#### *Discussion.*

Dr. HOPKINS. I wish to say how excellent I think this paper, and how heartily Dr. Boenning's work is indorsed by the laboratory work which I have done in the Harvard Medical School. I think what he said about pyorrhea is an accurate statement of our present knowledge of the subject. That pyogenic bacteria are the active cause of pus in all cases (except possibly in some obscure cases of cold abscesses) will bear the indorsement of all bacteriologists. I think in his paper he has given just enough importance to the streptococcus antitoxin. I think what he stated as his opinion would be indorsed by the experience of all bacteriologists; that is to say, that in a certain number of instances, not enough to make it a law, but in a certain number of instances, the antitoxin does seem to produce remarkable results, and on the other hand that there are a great number of failures which are so disappointing that sometimes it seems as if we are on the wrong track. I think the paper deserves a full discussion, although I feel sure that Dr. Boenning has so fully covered the ground that little more can be added.

Dr. BARRETT, Buffalo. This subject is one that appeals to me forcibly. As dentists we have not paid sufficient attention to surgical procedures. I am aware that there are three divisions of our practice, medical, surgical, and mechanical. I am not disparaging the practical, but I fully apprehend that from clinical experience must be deduced the laws governing practice, and yet we as dentists have not paid sufficient attention to surgical proceedings. How many dentists are connected and familiar with hospital practice? There is no city of any size but has its hospitals; I do not mean restricted dental hospitals. I think every city which has a

hospital should have connected with it one or more dentists. If there is no hospital, one should be organized, and dentists should take official steps in the formation of it.

I think that antral disease is very often mistaken, not only amongst dentists, but amongst medical men and surgeons as well. My treatment differs a little from that of the general surgeon, in that I always open from the lowest point when possible. I always make an opening sufficiently large. When there are complications, and thorough exploration is necessary, I follow the usual surgical procedure and open through the alveolar walls, usually at the posterior border of the canine fossa. Like Prof. Boenning, I make a free incision. Such a case was directed to my clinic a year or so ago, in which from certain indications aside from the absence of the second molar, I diagnosed a tooth in the antrum. I opened back of the fossa until I could insert the end of my finger, and I found the missing tooth, its roots inserted in the alveolar process and the crown projecting into the antral sinus. I dissected both the tissues and found an extensive necrotic condition. It was necessary to remove so much that the nasal and antral cavities opened into each other. The whole was washed out and properly dressed, and I have not the slightest fear of any further complications, because I primarily established perfect drainage. These things are simple and easy for the dentist who has studied surgical procedure.

I am the only one on the hospital staff who uses the surgical engine for operations. Our professor of surgery says he cannot do anything with the burs. They jump and cut just where he does not want them to go. I never think of such a thing as the jumping of the bur; but I am accustomed to the engine and know its use. It is an easy matter properly to direct it when one is familiar with it. Dentists should have positions in our hospitals, and should take charge of such cases as these, and I am sure that any of you will find that as soon as the hospital staff learns you are competent to take charge of a certain line of cases you will receive their warmest welcome to the staffs. We are not professional men unless we do true professional work and minister to the wants of the poor and the unfortunate.

When I rose, the point I wished chiefly to urge was that you should connect yourselves with some hospital work. It will take time, but it will be worth your while to do so. I am sure Professor Boenning will second me in that which I have said in regard to the value to yourselves of the hospital work, as well as the value of your work to the hospitals. As a profession we depend too much upon mechanical methods in cases of injury. We should look at them also from the surgical aspect.

Dr. BOENNING. I feel much gratified at the expressions concerning the paper. I entirely agree with Dr. Barrett in his opinion of the advantage of surgical experience to the profession. There are many chances for this work in the medical and dental dispensaries which are available. The dentist, however, is a busy man in the early years of his life, and it is for this reason that the young man does not take so readily to work away from his chair. I thank you for your attention.

Dr. M. L. RHEIN, New York city, read a paper, illustrated by diagrams, entitled "Porcelain Fillings." (Dr. Rhein's paper is printed in full at page 919 of this issue of the DENTAL COSMOS.)

# FRIDAY.

The morning of Friday was devoted to the following

## Clinics.

"Inserting Manufactured Porcelain Inlays in the Crown Surfaces of Molars." Charles A. Meeker.

"Method of Repairing Facings in the Mouth." DeWitt C. Shaw.

"Combination Fillings." Dwight M. Clapp.

"Watts' Crystal Gold." Orvan A. Glidden.

"Cemented Facings for Crown- and Bridge-work." Newton Morgan.

"Combination Tin and Gold Filling." Thomas D. Shumway.

"The Solving of an Extreme Case in Prosthetic Dentistry. (Illustrated by models.)" Cornelius S. Hurlbut, Jr.

"Porcelain, using Gasoline Furnace." Mr. A. W. Straight, superintendent mechanical heat department Turner Brass Works, Chicago.

"Demonstration of Fusing Jenkins's Low-Fusing Enamel." Murdock C. Smith.

"System of Seamless Contour Crowns." William N. Kidder.

"A Simple Way of 'Malleting Up' a Partial Cap for Use in Crown-work." Edward H. Smith.

"The Use of the 'Engraver's Instrument' in the Attachment of Rubber to Metal Plates." Edgar Gaylord Hubbell.

"Porcelain Inlays, using his own make of Furnace." G. Arthur Savage.

"Packing of Pink Facings in Vulcanite Work: Morgan's Process." Walter I. Boynton.

"Porcelain Inlays, using Hammond Electric Furnace." Charles C. Patten.

"A Method of Root-preparation and Root-filling." William F. Andrews.

"A New Cervical Clamp." Frank G. Gregory.

"Tin-Foiling Vulcanite Plates." Wallace F. Shaw.

"Turning of Rims on Metal Plates." Joseph N. Davenport.

"A Method of Packing Various Colored Rubbers." Ernest R. Whitford.

"Method of Controlling Saliva from Parotid Ducts." J. Wesley Shaw.

"Mouth Antisepsis." Chester T. Stockwell.

"The Making of All-Gold Crowns." Walter W. Swazey.

"A Novel Receptacle for Mixing Plaster." Walter W. Swazey.

"Orthodontia: Facial Contours Restored by Dr. C. S. Case's Method. (Illustrated by models and profiles.)" D. Hurlbut Allis.

"Retention of Loosened Teeth by means of a Ligature and New Plastic Mixture." John F. Dowsley.

"Immediate Extirpation of Dental Pulp by Use of 'Pressure Anesthesia.'" Elmer B. Abbey.



"Contour Approximal Gold Fillings,—Non-cohesive and Cohesive Gold." N. Penn Bugbee.

"Pulp Capping; Method of Placing Iodo-Formagen Cement." Nathaniel E. Preston.

"A Method of Using Ligatures to Take the Place of Cervical and Other Clamps." Louis Y. Schermerhorn.

"Different Methods of Filling Teeth." Wilfred H. Starratt.

"Crown- and Bridge-work: Dr. W. H. Baird's Method of Making Crowns." F. Bisbee.

"Retention Appliances." Horace L. Howe.

"Solila Gold." E. de Trey.

(To be continued.)

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

(Continued from page 851.)

THE reading of Dr. Vann's paper gave rise to the following

### *Discussion.*

Dr. J. Y. CRAWFORD, Nashville. I wish to thank the gentleman for his well-prepared paper, the latter part of which called attention to some very significant questions. One of the principal points, one that impressed me very much, was the question of preliminary qualifications for entering upon the college course of study. I hope to live long enough to see the time when our institutions, in addition to a good preliminary education, shall require the applicant to undergo a physical examination touching upon his qualification to become a dental surgeon. The lowest department of the governmental service cannot be engaged in until the applicant has passed his physical examination. The idea is not to get men who are imperfect, men who have incurable diseases, but men who have a good moral, intellectual, and physical character with no elements of perversion marking them.

Dr. M. F. FINLEY, Washington. I wish to thank Dr. Vann for the ideas he has expressed and to acknowledge my appreciation of his paper. My idea is to do something in the line of ethics which will influence the student before entering the profession, and which will maintain its hold upon him throughout his career and in the college course, to impress upon him the necessity of living in accordance with the ethics of the profession. It occurs to me that we could demand of a student, on entering college, as much as is demanded of an applicant for membership in a secret society. We could require of him an obligation to live an ethical life after leaving school. More effect could be produced in that line when he is entering his college career than after he has entered into the ranks of the profession, and has gone in the wrong direction. I have read some articles in the journals on this subject in which the claim was made that the burden of properly controlling the individual in the profession lies on the societies, whereas I think it

rests with the colleges. The colleges might insert a clause in their diplomas which would make their validity conditional upon the possessors of such diplomas conforming strictly to the code of ethics.

Dr. J. J. SARRAZIN, New Orleans. I am glad to see Dr. Finley take the position he does, and I think his idea is not only a possible one, but quite a practical one. I am glad to say that this idea has occurred to us down in the South (and, I should say, in the city of Atlanta) of making graduation of a candidate conditional upon his subscribing to the code of ethics, and constantly bringing before him the importance of living up to it. It is not a new idea, and, as I have said, it is possible and practical. This impression should be made early in the day; a strong impression made upon the young mind is much more lasting than it would be later in life. I think it would be a good idea if we could make this a general custom throughout the entire country,—making the signing of the code of ethics a condition of the diploma, and keeping it constantly in the minds of the students. Insert such a clause in the diploma that when seen in after life it would show that the holder, if he be not ethical, is a traitor instead of trying to live as an honorable individual.

Dr. WM. CRENSHAW, Atlanta. I concur most fully in Dr. Finley's suggestions, and wish they could be carried out. I am glad to see the teaching institutions in the South following the suggestions made by Atlanta. It is my anxious desire to have students remain ethical after graduation. So far as we can make it imperative, we have done so. There is more in the maintenance of the profession than we think.

Dr. W. O. TALBOT, Biloxi, Miss. I wish to indorse the suggestion of Dr. Finley in regard to the signing of the code of ethics before a man is allowed to graduate. I also think it would be a good idea to insert a clause in the catalogues of the colleges, announcing that the applicant for graduation would be required to sign the code of ethics, and to make an oath that he would live up to it. He would know then what he was to sign before entering. I think all institutions have the right to insert such a clause in their diplomas.

Dr. A. M. JACKSON, Milledgeville, Ga. I think these suggestions very good. Signing an oath does not bind a rascal. Incorporate a clause in the diploma to the effect that the legality of the diploma depended upon their living up to the code of ethics. I believe the colleges have a perfect right to insert such a clause.

Dr. YOUNG. I understood the paper to be on "Apathy in the Dental Profession." Apathy means indifference, carelessness. I think there is no profession under the sun that has the energy and determination to come to the front that the dental profession possesses. There is no occupation since the time of the Pharaohs that has made such advancement. I do not think for a moment that we are sleeping over our rights. As soon as a man becomes a dentist it seems to stimulate him, and makes him more and more a gentleman. The dental office of to-day is a revelation. We find

in an up-to-date dental office a clean laboratory, improved instruments, and a gentleman at the chair. I say we are destined to rise.

You cannot legislate morality into a man. When a man enters a profession, if he does not conduct himself as an honorable, moral citizen, he will not be a success. If it is not born in him, you cannot legislate it into him. So far as morality is concerned, I do not believe there is a purer and cleaner profession than dentistry. I say the profession, as a whole, has conducted itself in such a manner as to place it above suspicion. Many ladies go into dentists' offices upstairs after dark. We see this every day. How can you account for this? Simply because the dentist is a gentleman, and stands above reproach.

Dr. W. R. BOGLE, Nashville, Tenn. I thank the gentleman very much for the paper. His suggestion with regard to inducing the young men of the profession to come into the societies is a good one: Get them to come in with us, and work with us in our associations in order to get some good out of them. Let them feel that the profession has an interest in them. It may be that, at times, they do not feel able to attend these meetings; we should get them to send in their names for membership, and contribute articles to the society. I think we could do a good work along this line.

Dr. VANN. Some years ago Dr. Brown, of this city, delivered a lecture at the Montgomery meeting of our state society. I have forgotten his subject, but his theme was, "What shall we do to improve the attendance of our state societies?" I enjoyed the lecture very much, and went home and continued to think about it. At the next meeting of the state society I heard the same cry. It seemed to come from every state, until finally the subject of apathy was suggested to my mind with respect to the associational work of the profession.

It is the rule that history repeats itself, and let us recapitulate for a moment. I brought out the point in the paper that the fifteenth century advancement was along material lines; the sixteenth, development along religious and moral lines; the seventeenth, along intellectual lines, and the eighteenth, along the line of executive ability. The nineteenth then completed the cycle, and returned again to the material views of life. So we are now in the beginning of the twentieth century, and we must naturally look to education along religious and moral lines. Beautiful illustration of the fact that the nineteenth century has prepared the way for the social reorganization of the race, and that the individual will be developed as a member of society, is seen in the donations Mr. Carnegie has made for the purpose of establishing libraries for educating the public. I have also noticed recently that Mr. Rockefeller is becoming interested in the education of the Southern people. This only shows the natural tendency to follow the cycle.

I am very much gratified to see that my friend from Anniston is so sanguine with respect to the future of dentistry. He takes the optimistic view of the present condition. I think his definition of apathy is quite correct. If he will think for a moment, though, he



will readily see that the development of the last century was largely along material lines. If we have not apathy in the profession, our president is very much mistaken in his annual address. He called attention to the fact that the Georgia Dental Society at the last meeting was about the same in membership as it was fourteen or fifteen years ago. That is what I call apathy. He spoke principally with respect to Georgia, but what is true of Georgia is true of all the other Southern states. Only about half of the dental profession is represented at these societies. It is my opinion that we can do a great work personally along this line, if we will go back home and talk about the good things received at the association, and encourage our brothers to come out and become members. Let us also go home and edify the people, and enlighten our patients, with regard to the good we get from our societies. I say we do have apathy along these lines, and it is time we were awakening, and using our every effort to educate the people along moral and intellectual lines.

I thank you all for what you have said with respect to the paper.

On motion the subject was passed.

Dr. Turner, chairman of the Executive Committee, presented the names of Dr. R. B. Adair, of Atlanta, Ga., and Dr. M. E. Turner, of Atlanta, Ga., for membership to the society.

The following resolution with regard to the condition of the dental surgeons in the army and navy, was introduced by Dr. V. E. Turner, Raleigh, N. C.:

*Resolved*, That it is the sense of the Southern Branch of the National Dental Association that the enlistment of dental surgeons by the Navy Department to menial positions and detailing them to do professional service is inconsistent with the character and value of the service required, and an inconsiderate disregard of the status which is accorded the dental profession by the state laws, by the state universities and other educational institutions, by the public of this and foreign countries, and by the act of Congress creating an Army Dental Surgeon Corps, whose members are equal in professional status with two-thirds of the members of the Medical Corps of the Army; and further

*Resolved*, That the adoption of the pending bill on the subject, Senate 2519, is the least that should be done to remedy the wrong against which the dental profession is thus forced to protest.

Dr. Wms. Donnally, of Washington, D. C., was asked to explain the existing conditions, and to inform the convention as to what progress had been made to better the conditions of the dentists in the army and navy.

Dr. DONNALLY. Being called upon to make some explanation of the conditions that justify this association in making such earnest protest against the action of the Navy Department in employing dentists in the capacity of yeomen, and detailing them to do dental service, I will say in the beginning that for many years the question was not agitated by the dental profession, seeming to be indicative of the indifference of our profession in claiming recognition in the navy. But this seeming indifference was dispelled, and an interest was awakened, and, at the meeting of the National at Omaha, a committee was appointed to take under consideration the conditions prevailing in the army and navy, and make recommendations at the

next meeting. The committee reported at the Niagara meeting, recommending in substance that we make a particular effort to go before Congress with a bill on the subject. The report received consideration at the hands of a committee, and they reported, recommending a continuance of the original committee with instructions to use every effort toward having a bill passed by Congress to improve the status of dental surgeons, and putting them in the army on the same basis as the contract surgeons, who constitute a large majority of the medical corps of the army. The Surgeon-General opposed this, but after very great effort the bill was passed, and became a law. The bill was fathered in the Senate by Senator Pettus, of Alabama, who was instrumental in getting it through that body. Some months later Hon. Hardy, of Virginia, took up the bill, carried it through the House, and it is now a law. Those dentists who constitute that corps are on a par with the contract surgeons, who compose something like five-sevenths of the corps.

The conditions in the navy are entirely different. There is no contract system there. The navy is a little more severe than the army, and your committee had an interview with the medical officers of the navy with regard to improving the status of the dental surgeon in the navy. We were prevailed upon, however, to make no active effort in view of the fact that legislation on the subject was pending, and that any action on our part might interfere with it; while they promised to aid us later on. We were informed that the legislation had for its object the improvement of the status of the medical profession in the navy. The status was not sufficient to warrant the better class in coming into the navy; promise of promotion was not such as to induce them to come in. The bill was approved by the Secretary of the Navy, and improved status was gained. After the medical officers obtained what they had asked for they refused to help us with our legislation. Upon investigating the conditions, we found that they were employing dentists as yeomen, detailing them to do dental service under conditions that would mean something like forty dollars or sixty dollars per month. It then became necessary for us, in defense of the honor of the profession, to ask Congress to pass a bill that would improve the status of the dental surgeon, and that would give us such recognition as is given by the general public; such as is given by people of foreign countries to American dentists; such as is given by the universities and other educational institutions of the country. We took the position that it was necessary for us to ask of Congress that which had been denied us, and to right the wrong that had been voluntarily heaped upon us by the medical officers after their getting what they asked for.

I will give you one simple illustration of the effect of the existing conditions: Two young men enter the university together, one going into the medical department, the other the dental department; they go along together, practically having the same teachers for the first two years; then they separate, each for the practice of that

particular branch which he is to follow. They get out, one eligible to maintain status in the navy with the right of promotion through six different grades,—many attain fourth and fifth grades after having been in for a few years,—the other eligible to become a yeoman. The dentists are not permitted, under the rules of the department, to enter that part of the vessel in which the commissioned officers are quartered, except on special business; in that case they enter, salute, state their business, salute, and return to lower deck. This condition of affairs receives the approval of the government. It goes out into the world, and every young man who enters the dental profession with the intention of going into the navy, when he learns that this condition exists will proceed to change his mind, and enter the medical profession. I think the least we could do would be to adopt this resolution, and urge every man who has a representative in Congress to use his efforts to get him to support a bill that will give us simple justice.

Dr. SARRAZIN. The resolution in question has already been adopted. I think we all feel very grateful to Dr. Donnally for what he has done as one of the committee. It seems to me, though, that we might do something that would have greater weight in Washington than the simple signature of the officers to the resolutions. I would suggest that each member of the association sign the resolutions, indicating the state he is from, showing that it has the approval of an association that is representative in this country.

Dr. YOUNG. I wish to state this fact, that General Pettus, of Alabama, was the main leader in getting this bill through Congress. I know personally this knight of the Lost Cause. He is a grand old man, who has grown hoary in the service of Alabama, and the man to whom we are indebted for making the government recognize the dentist as a man of ability. I think it would be a good idea to pass resolutions of thanks for his efforts in the past, and request that he continue them in behalf of improving the status of the dental surgeon in the navy. I wish to make the following motion:

That the secretary be instructed to transmit the resolutions relating to the Navy Dental Surgeon bill to the Hon. E. W. Pettus, with the request that he continue to pursue the object to a successful conclusion, and to suitably express the high appreciation of this association of the important service he has rendered in securing to the army the benefits of the service of a dental surgeon corps.

Motion passed.

The Executive Committee submitted the following names for membership: Dr. Thomas Crenshaw, Atlanta, Ga.; Dr. H. J. Pratt, Atlanta, Ga.

A report from the committee on Orthodontia and Oral Surgery, W. E. Walker, D.D.S., chairman, of Pass Christian, Miss., was read by the secretary, as follows:

#### REPORT OF COMMITTEE ON ORTHODONTIA.

The year of our Lord 1901 marked an epoch in the history of dental science, in that it saw the organization of a society devoted to the promotion of orthodontia as a distinct specialty, to be taught



and practiced as such. I have thought it not unwise, as chairman of your committee on Orthodontia, to direct your attention to the organization of that society and to mention some of the reasons which seem to justify its existence, for, in the words of the president of the society, in his address at the first annual meeting, at St. Louis, June 11, 12, 13, 1901, "If there be good and sufficient reasons for such a society, they should be known and recognized by the lovers of all branches of medical science, and the sympathy and assistance of all enlisted, that the greatest degree of benefit may be conferred, not only on the science of orthodontia, but on humanity at large, to whose welfare all laws enacted, and all societies organized, owe their first duties."

To the student of the history of orthodontia there are reasons that are self-evident. Although we know nothing of its genesis, it is probable that there has always been more or less malocclusion, and consequently more or less successful attempts directed toward its correction or prevention, extractions doubtless having been early resorted to for the relief of crowded malposed teeth. The history of orthodontia as found in our literature consists largely in the description of appliances designed to meet the requirements of special conditions, each case apparently looked upon as an entity, governed by laws peculiar to itself, and to be treated accordingly, regardless of principles and too often in violation of physiologic requirements and hygienic conditions.

Quoting from the presidential address referred to above: "While the demand for general operations in dentistry is supplied with perhaps as high an average of skill as any of the branches of the arts or sciences, the same cannot be said of orthodontia, for notwithstanding the fact that malocclusion, with all its baneful effects, has grown to be almost the rule instead of the exception, only the merest fraction of those needing attention are receiving it, and even such treatment as is meted out is of such nature as to leave but little doubt in the mind of the careful investigator that more blunders are committed than successes achieved. Notwithstanding the fact that dentistry proper and orthodontia have been so intimately blended, yet the number who could pass an intelligent examination in orthodontia, or who could scientifically diagnose and meet the requirements in the treatment of any but an average case, is remarkably limited." . . . "Why is it that so little really good work is done in orthodontia in proportion to the opportunities and its importance? Why is orthodontia, in practice, but a side issue to all other operations in dentistry? Why is instruction in this branch, in our colleges, so defective? Why are the discussions of papers on this subject, in our societies, so weak? Why is there such a lamentable number of failures and blunders in the treatment of cases? The answer is found in the fact that orthodontia is a science in itself, with requirements in its study and practice so radically unlike that of other branches of dentistry that the two can never be profitably combined, either in the study or the practice."

The specialization of orthodontia is on a par with the specialization of the various branches of general medicine, and the same marvel-

ous advances will doubtless follow. And here we find the true reason for the organization of a society devoted to the advancement of orthodontia as a specialty. "Our best efforts can only yield the best fruit in strong, earnest, sincere, concerted action."

The papers presented at the first annual meeting of the society are worthy of careful study.

Dr. W. Booth Pearsall, of Dublin, Ireland, in a cordial letter of greeting, urges the study of orthodontia by scientific methods; the investigation and record of truths gathered from reliable sources; the placing on record, by means of casts, diagrams, and photographs, well-selected examples of malocclusion, duplicating the same for the purpose of interchange for school and other museums. Dr. Pearsall pointed out the great need for a more accurate nomenclature, and I commend to your attention the suggestion that the term maxilla be applied exclusively to the upper jaw; similarly, the lower jaw to be known as the mandible; "maxillary" and "mandibular" teeth to supplant the meaningless terms "superior" and "inferior."

Herbert A. Pullen, D.M.D., Buffalo, N. Y., presented a valuable paper on "The Laws of Articulation," emphasizing especially the distinction between the term "occlusion" and "articulation." I quote the summing up of his paper: "The laws of articulation are important aids to us in diagnosis, prognosis, and treatment of malocclusion, to appreciate which we should note their working in each case presenting, not only with the view of gaining personally by so doing, but also with the possibility of discovering new practical points tending to progress in our chosen specialty, along lines which promise much, and toward which I can only point the way."

Dr. W. J. Brady, Iowa City, discussed the mechanism concerned in the operation of occlusion,—a "factor to be reckoned with in nearly all operative procedures, especially those that involve any restoration of the contour of the teeth, one of the vital points in every prosthetic operation, including the vast sphere of crown- and bridge-work. Scarcely an operation is performed within the fields mentioned but that is in some way materially influenced by the occlusion of the teeth, and yet nothing is more constantly overlooked and disregarded. . . . The study of occlusion includes consideration of the form and size of the jaws and the superimposed alveolar processes, together with the anatomical relations of the temporo-maxillary articulation. It includes the study of the effect of the nasal or pharyngeal troubles upon the development of the teeth, absorption and eruption, with the great influence that the lips, cheek, and tongue exert over their assuming their proper places in the arch following eruption; it includes a study of the form of the individual teeth, with their relative sizes and the shape and number of their ridges, grooves, sulci and cusps; . . . also a consideration of the occlusal planes of the teeth and how each and every cusp, ridge, and surface occludes with the opposing teeth."

Dr. W. O. Talbot, Biloxi, Miss., contributes a paper on the disproportionate development of the upper and lower jaws, including simple rules for determining their *supra* or *sub* normality; rules

based upon the definite relations known to exist between the bones of the human body, variation from these definite proportions serving to give variety in form and stature. Searching for some rule of proportion in the size of the upper and lower jaws, together with the other bones of the face that have to do with the facial outline and give expression, Dr. Talbot, after the examination of a number of cases, reached the following conclusions:

First. When the teeth are in normal occlusion and "the line of harmony" applied, there are three points of the face that are in the circumference of a circle described by the compass having the condyle of the lower jaw as the center. These three points are, 1, the point of the chin; 2, the tip of the nose; 3, the frontal eminence (about one inch above the line of the eyebrows).

Second. When the upper teeth are in normal position, and the jaw normally developed, the point between the cutting edge of the upper central incisors, and the concavity between the nasal bones on the ridge of the nose (between the eyes) are equally distant from the condyle of the lower jaw, measured with the compass.

Third. When measurement 1 applies, and 2 does not, the deformity is in the upper jaw. If *over-development*, the point of the compass in measurement 2 will not reach the edge of the central incisors. If the lower jaw be *not sufficiently developed*, allowing the teeth to crowd, the point of the compass will pass beyond the incisors.

Fourth. When measurement 2 applies and 1 does not, the deformity is in the lower jaw. If *over-developed*, when the point of the compass is placed on the point of the chin, with the other point on the condyle, and a circle be described, the point will miss the nose and go high up on the forehead, in extreme cases going over the forehead. If the lower jaw be *subnormally developed*, the point of the compass, when adjusted to touch the point of the nose and the frontal eminence, will miss the chin.

Dr. Richard Summa's paper was devoted to a critical review of Dr. Goddard's chapter on Orthodontia in the "American Text-book of Operative Dentistry," contrasting unfavorably Dr. Goddard's "fifteen classes of irregularities" with Dr. Angle's "three classes of malocclusion," each with its division and subdivision. Dr. Angle's classification, admirable as it is, appears to the present writer deficient in that it fails to provide for a distinction between cases in which the upper teeth are mesial of their proper position, and cases in which the lower teeth are distal of their proper position. We may, for instance, have two cases in both of which the lower arch bears a distal-relation to the upper, and yet they may require very different treatment from the fact that in one the upper arch may be in its normal position *in relation to the rest of the face*, with the lower arch distal both in its relation to the physiognomy and to the upper arch; while in the other, with the same relative position of upper and lower arches, it is the lower arch which is normal in relation to the rest of the cranium and face, the defect being really in the upper jaw. The first is a case of inferior distal occlusion; the other of superior mesial occlusion. The first case requires that



the lower arch be advanced; the other that the superior arch be retracted. To treat the two classes alike would be a very grievous error.

L. W. Beardsley, M.D., St. Louis, in his paper discussed the "Power of Specialization," basing his argument on physical laws. Attainment is resultant from the application of study to knowledge, the rate of attainment depending upon the amount of study and the bulk or mass of knowledge. As the mass of knowledge grows larger, so must our thoroughness decrease. But divide the mass of knowledge and redivide and subdivide, directing our power of study toward one of the subdivisions, and it follows that our rate of acceleration, or our thoroughness of achievement, increases proportionately.

Dr. Grafton Munroe, Springfield, Ill., discussed the essential requisites of an efficient appliance for the correction of malocclusion and abnormalities in the arches, namely, simplicity, delicacy yet power, inconspicuousness and stability of attachment. The human mouth being built as a vault spanned by an arch with two concentric arches carrying the teeth, the regulating arch which follows nature's own plan is logically the most appropriate form for an adjusting appliance, recognized as such as far back as 1726, when, as we learn from Dr. Munroe's paper, Fauchard introduced this device.

In a paper entitled "Is Orthodontia Justly Represented by its Teaching?" Dr. Loyd Lourie discussed the methods of teaching orthodontia, as outlined in the announcements of different colleges, his contention being that too much time is devoted to making appliances,—taps and nuts, bolts and bands, tubes and screws, appliances simple and complicated, patented and original, his conclusion being that present methods of teaching orthodontia do not justly represent orthodontia, but tend to create an aversion to a study which should be fascinating. There should be more teaching of principles and less of technique, the greatest hindrance being a lack of system. What the student needs is a thorough familiarity with the principles which will enable him to diagnose the cases which come under his observation: "Occlusion, being the very foundation, should be given the first consideration. With a knowledge of its principles, and a thorough appreciation of their far-reaching possibilities, there is less need for consideration of problems otherwise difficult of solution." "It is of the very first importance that students of dentistry should be given such instruction as will form a basis for intelligent diagnosis and prognosis. They should have that, if nothing more."

In the present writer's opinion, second in importance and order of consideration to occlusion only is the relation of each arch and each half arch to the face, for upon the facts ascertained by such an investigation should often depend which of several procedures it would be proper to follow.

#### *Discussion.*

Dr. W. O. TALBOT, Biloxi, Miss. At first appearance, the disarrangement and misplacement of the teeth in the arch may seem very simple, and we may think that they may be placed in alignment

very easily, but when we study the subject closely, investigate the causes of these irregularities, we find that we often have something to contend with that will tax us beyond our ability. I have seen a great many cases that were almost ruined, and the patient left in a worse condition, from the simple method of extracting to correct an irregularity. I have in mind one case, in particular, in which a gentleman attempted to correct a simple irregularity in the lower jaw. The anterior teeth were badly crowded. The child was nine years old; lower first molars badly decayed. He extracted the lower first molars. The child is now fourteen years of age; the lower teeth are regular and even; the lower arch is smaller than the upper; upper teeth are badly crowded; canines out of line, and the consequence is that we have a very serious condition to treat, simply caused by extraction to get room. We should give this subject more study, and I am in accord with the suggestion in the paper that urges upon the profession a more careful study of orthodontia. I believe the time is coming when people will so appreciate orthodontia that it can be made a specialty.

Dr. CRAWFORD. There was an impression made on my mind that they propose to separate this department from general practice. I would certainly be very much opposed to such a step. I do not mean to be understood that I would be opposed to a gentleman's devoting himself to that feature of the profession, but to undertake to say that when a practitioner finds a tooth out of place he is not to put it back, but must leave it to a specialist in orthodontia, I think is a move in the wrong direction. We have too much tendency toward specializing. I have heard that a great many advocate the separating of mechanical and operative dentistry. I am bitterly opposed to any such move. I believe a man makes a better operator from being a prosthetic man, and so with the other branches of dentistry; I believe we can do most good and get better results from being all-round dentists.

Dr. J. P. CORLEY. I am sorry that I missed the paper. I heard only a few closing paragraphs, but with the permission of the essayist, I will say a few words on Dr. Crawford's discussion. I am surprised that he should be opposed to the specializing of dentistry, and do not see why we cannot specialize as well as can the medical profession.

When Dr. Walker wrote me that he thought of going to New Orleans to practice orthodontia, and asked me what I thought of the plan, I commended it. I think it is one of the greatest evidences of progress to know that we are able to specialize in dentistry. The time is coming, and I long to see it, when we will be compelled to specialize. In order to make a success of any branch, a man must be in a position to devote the proper time to the study of that branch. We try to do too much, and do not master any one thing. How much time has the busy practitioner to devote to the study of a case of irregularity? Not enough to assure him of success. The same is true in operative and mechanical dentistry; the man who goes from his laboratory to operating upon the delicate tissues of the mouth cannot possibly get the same results as the operative specialist.

Dr. FINLEY. I feel that I must indorse what Dr. Crawford has said. It is possible for us to specialize in the different branches of dentistry in the large centers of population, but in the majority of practices of the dentists throughout this broad land, a man must be an all-round dentist in order to take care of the patients that come into his hands. To thoroughly appreciate what is best for our patients we must be able to perform all the different dental operations. The greatest good is done to the patient by those dentists who have never attempted to specialize, but are able to do everything. The essayist brought out the point that there was much harm done by the extraction of teeth for the correction of irregularities. I agree with him there. The trouble with most of the profession is, that they look at a case, decide that a tooth must come out, and act accordingly. Casts should be made and thoroughly studied before attempting to correct the same. That is where the mistake is made. We should devote more time to the study of individual cases. I am opposed to the dividing up of dentistry into specialties. It may possibly do in the large centers of population, but I say it is not practical in the main body of our profession.

Meeting adjourned to meet Friday morning at 8.30 A.M.

There was no business meeting Thursday night, on account of the banquet tendered the association by the Atlanta members.

#### FOURTH DAY—*Morning Session.*

Meeting called to order by the president at 10 o'clock A.M.

The committee on Life Insurance being called, Dr. J. Y. CRAWFORD, Nashville, made the following report:

I have no formal committee report to make. About the most encouraging report I have to make of progress on this line is that we have organized a local dental society in our city. We are in accord with the spirit of this association, and also with the state societies. About a month ago we had a meeting and it was suggested that we appoint an executive committee to discuss the merits of the question whether it would be proper to have any questions introduced into the medical examinations. In discussing it, it was requested that each member formulate in his mind one or more questions to be incorporated into the medical examination, touching the question of life insurance. To my mind, the most difficult problem we will have to solve is to decide the number, form, and extent of the questions. I want you all to go home and do what we are doing there. We had a medical examiner to meet with us, and we put to him two or three questions on this line. It had never occurred to him before, but he thought it a good idea to ask some questions with regard to the condition of the oral cavity. Within the last few years questions have been added to the medical examination for life insurance that were never required before. Take the question of appendicitis. Hardly by any process of demonstration can we determine what influence appendicitis has on the mortality rate of the country. Taking the statistics of the companies it would be difficult to tell what effect this disease has on the death-



rate in the insurance companies. I think that statistics will prove that diseases of the oral cavity have more effect on the mortality rate of this country than appendicitis. We asked this examiner if he thought we should have any trouble in having incorporated in the medical examinations a few questions with regard to the oral cavity. He said he did not think we should. We illustrated the effect by a hypothetical case, as follows: Applications come from Mr. A. and Mr. B. The examination shows them both to be of doubtful character. Take Mr. A. and Mr. B. to the dentist, and have their teeth examined; find that Mr. A. has a perfect set of teeth, but Mr. B. has not a good set. We asked if he thought this would have any effect on the applications. He said it certainly would. We then asked him if he would consent to having inserted a question with regard to the examination of the teeth and the oral cavity, and requiring that they be put in good condition. He said he thought we could have such questions inserted.

Gentlemen, it would certainly be worth much to us. We have two problems to solve; one is to agree on the number and type of these questions, and the other is the amount of value attached to them. The justness of the cause is beyond question. As the committee did not have an opportunity to make a formal report, I take the responsibility of asking for extension of time to this committee.

On account of the pressure of time, motion was made to have the paper of Dr. W. E. WALKER, Pass Christian, Miss., "Current Literature on Orthodontia," read by title. The paper was as follows:

#### A PARTIAL REVIEW OF THE CURRENT LITERATURE ON ORTHODONTIA.

Dr. A. H. Thompson, in a paper entitled "A Study of Comparative Occlusion, and its Bearing upon Orthodontia" (DENTAL COSMOS, January, 1902), discusses the force with which the mandible is closed upon the maxillaries in food-reduction; the means of measuring and testing the power, and modifying influences. Quoting from John Ryder (1878) on the mandibular movements and occlusal force as the proximal causes of tooth-modification in form, tissual structure, position, and supporting environment, the teeth developing in accordance with the occlusion, taking their places to meet the demands of use, the supporting environments being evolved to give the teeth stability and permanence, Dr. Thompson discussed the causes of abnormal developments, deformities and disarrangements. He says: "Among the most potent of these are the inherited effects of disuse. The lack of use in the parent is undoubtedly transmitted to the child as a deficient growth-stimulus, and appears in the defective development of the parts which have not been employed, and accrues from generation to generation. This is a fundamental law of evolution. The lack of development of the masticating apparatus in a child can to an extent be laid to the disuse of these parts by the loss of the transmitted effects of normal occlusion. Then

the child also, because of the imperfection and inefficiency of the parts, fails to develop any occlusive power at all, and the erupting teeth accordingly fail of a proper arrangement in the jaws. In other words, the occlusive force must be exercised to attain the proper development of the parts. Failing in the occlusive force, normal development fails. That is a logical conclusion. . . . Nature is niggardly of her expenditures, and wastes no materials upon parts which are apparently useless. As soon as a part ceases to be employed, and employed actively and usefully, she sets about its reduction by the workings of the natural principles of the economy of growth. . . . The effects of disuse are apparent in all forms of malocclusion and mal-development of the bones of the jaws. Irregular teeth being inefficient and inconvenient for the purposes of mastication, this necessary function is gradually neglected and falls into abeyance; the food is never properly masticated, and the parts remain undeveloped and embryonic to a degree. For this reason, after the correction of an irregular condition and the restoration of normal occlusion, the patient should be instructed to masticate the food thoroughly and hard, to the end of inducing a re-development and a hardening and strengthening of the parts. Not having been accustomed to the performance of normal and hard mastication, much voluntary effort will be required to establish the habit, but it is absolutely essential that it should be performed."

Dr. J. Sim. Wallace, in the *Dental Record* for November, discusses the influence of heredity with reference to the diminution in size of the human jaw. He mentions three principal causes of the diminution: (a) From muscular inactivity; (b) The more posterior position of the whole arch, due to the diminished size of the civilized tongue; and (c), The smaller size of the teeth themselves; the conclusion being that to a large extent the size is not due to heredity, but is largely a characteristic re-developed in each generation as the result of the action of the environment.

*Mouth-breathing and Distorted Arches.*—In the DENTAL COSMOS (October, 1901, Periscope) is found an excerpt from a paper by Mr. Mayo Collier, delivered before the British Laryngological, Rhinological, and Otological Association (published in the *Lancet*), from which I quote: "The association of mouth-breathing with high palate, unsymmetrical upper jaw, prominent nose, open mouth, and thin, flattened face is a constant one. . . . I am old enough now to have seen many instances of children with beautifully formed faces, symmetrical dental arches, and perfect nasal respiration become in after life quite altered. The upper arch has become so distorted that the molar teeth on each side are approximated so that the teeth of the upper jaw rest only by their edges on the teeth of the lower jaw, whereas the incisor teeth of the upper jaw protrude forward and hang in front of the incisor teeth of the lower jaw. The whole of the upper jaw may become atrophied, the nasal respiration almost entirely suspended, the palate highly arched and V-shaped, and the mouth

constantly open. Why this change? . . . Hereditary tendency in these cases did not exist, the parents in all these instances having remarkably well-formed upper jaws, and being particularly good-looking. I can produce the same effect on any young animal chosen indiscriminately by blocking its nose for a long time with cotton wool. Is it unreasonable to suggest that turbinal atony and hypertrophy in the young and growing subject will act as the piece of wool in the nose of the young animal? From what I have said as to the alteration in the air-pressure inside the nose, consequent on anterior occlusion, you will gather that a small increase of pressure from without, constantly applied on the walls of the nasal box is capable of pushing up the palate, disarranging the upper mandibular arch, and causing general atrophy and an undeveloped condition of the whole upper jaw. Moreover, if these cases are taken in an early stage, and the respiration is restored, the constant stream of air passing through the nose molds and expands the upper maxilla, and in time the greater part of the deformity will disappear."

*Jumping the Bite.*—Dr. Eben Flagg discusses this subject in the *Dental Brief* (November and December issues), the first paper of the series having been published in the same journal (April issue), in which paper Dr. Flagg described the methods and materials used by himself in the making of bolts, jack-screws, tubes, taps, bands, nuts, etc. A case is also described and illustrated, in which the undeveloped maxillary arch was expanded and the teeth brought into position without any operation upon the lower jaw, occlusion being then only possible by a voluntary thrusting forward of the jaw until the lower second molar closed correctly in front of the corresponding upper, instead of behind it as in the original false occlusion. A band bolted around the upper second molar had a wire soldered to it in such wise as to prevent occlusion without any assistance while the action of the masticatory muscles brought the condyles to their correct position at the temporo-maxillary articulation, frequent massage over this region serving to relieve the strained feeling while the change was being effected. The case described in the November paper is one of "jumping the bite backward," the lower jaw having been retracted. In the treatment of his cases it is the custom of Dr. Flagg to make duplicate models, from one of which the teeth are removed with a fine saw, and rearranged, as it is done with porcelains in prosthesis, demonstrating what would have been the proper arrangement of the teeth if nature had not been, in some way, interfered with. The readjusted models serve as guides for the construction of the apparatus for the case. In the third paper of the series (*Dental Brief*, December issue) Dr. Flagg discusses the causes of malocclusion; its infrequency in the deciduous set; the factors in the work of correction, especially the determination of blood to the tissues, and accelerated, healthy circulation, giving tone to the parts, supplying them with the elements necessary to their rebuilding and restoring them to their normal typical form.



In the *Dental Review* (September issue) may be found a valuable paper on "Jumping the Bite," by Robert McBride, D.D.S. (Dresden), read before the American Dental Society of Europe, and the discussion of the paper by that body; the paper being amply illustrated with photographs of casts and portraits "before and after."

A paper entitled "Incisor and Profile," by C. L. Goddard, M.D., D.D.S. (*Dental Digest*, November, 1901), is of interest to Orthodontists, showing, in mammals, the progressive reduction of prominence in the incisor region, through the suppression of incisors and the reduction in the number of premolars. The typical number of incisors is three on either side, which in the quadrumanus is reduced to two; the work continuing in our higher civilization in the frequent absence of the lateral, or its presence as a simple cone. In the discussion of the paper Dr. C. N. Peirce emphasized the fact that wherever there is increase in the size of the brain-case there is a lessening of the length of the lower jaw and of the number of teeth. As illustrated in the lower animals, the marmoset has a larger brain-case than any other monkey and is the only one that has no third molar.

In a paper entitled "Some Esthetic Considerations in the Treatment of the Teeth in the Incisal Region," by Dr. B. Holly Smith, read before the American Academy of Dental Science (Boston) under the head of Orthodontia, Dr. Smith gives illustrations of the models of four cases in which the patients were respectively fifty, forty-three, thirty-five, and twenty-eight years of age, showing very encouraging possibilities in the correction of irregularities "after youth has elapsed into middle age," the general impression being that this is impracticable. In one case twenty, and in another, ten years, had passed since the patient had been assured that it was *too late*. "All had opportunity for previous relief which had not been afforded."

Other papers worthy of your attention and study are—

"Some Observations on the Motions of the Mandible," by Messrs. Tomes and Dolamore, and a "Criticism" of the same by T. E. Constant, M.R.C.S., L.D.S., Eng., to be found in the *Journal of the British Dental Association*.

"Is the Symmetrical Extraction of the First Permanent Molars Justifiable?" by Dr. Elof Förberg, of Stockholm, read at the meeting of the American Dental Society of Europe (*Dental Review*, November).

"Regulating Pulpless and Pyorrhea-diseased Teeth," by Calvin S. Case (same journal).

"Restoration, Correction of Curves, and Advancing Bite by Means of Bridge-work," by Dr. W. S. Davenport, of Paris, published in the *Dental Review* (July issue), but the accompanying illustrations of which are found in the October number.

Dr. R. K. Luckie, Holly Springs, Miss., chairman of the committee on Oral Hygiene, not being able to attend the meeting, his report was read by Dr. Corley, as follows:

## REPORT OF COMMITTEE ON ORAL HYGIENE.

We are prepared to present you with two papers; one from Dr. F. W. Stiff, subject "Our Next Forward Movement, Teaching Hygiene"; and one from Dr. J. P. Corley, "Practical Points in Teaching Hygiene." Two members of our committee, Drs. Finney and Beadles, are situated so that they could neither write papers nor attend this meeting.

In the field of oral hygiene there is much ground to cultivate, enough to keep many men employed for an indefinite time. The work is one of preparation for war in time of peace, guarding the weak places, and fortifying against the ravages of disease. The prevention of diseases themselves, and their etiology, form a rational course of procedure.

How many of us give any thought to oral hygiene? Many dentists think that when they find and fill a cavity, or perform any dental operation, their work is done except to collect a fee. This is not right. We must talk; we must urge; we must advise and do whatever may be necessary to impress upon our patients the importance of cleanliness. The true dentist makes his patients feel that he is practicing his profession for their good, instead of his own.

A clean mouth, how important! This is the gateway to the system. We see with our eyes; we hear with our ears; but nothing enters the physical system except by the mouth. Almost every disease, either directly or indirectly, enters by the mouth. Even in a healthy mouth, so considered, there are thousands of germs. How many more thousands are there in an unclean mouth!

The practice of oral hygiene means that we must use prophylactic methods,—brush, brush! water, water! toothpick, floss silk, soap, pasteurine, listerine, etc. We must give much free advice with no idea of immediate gain. The professional man has the good of his patients continually before him and is always on the watch.

*"Cleanliness is next to godliness."* The ancient Jews recognized this truth in their purification ceremonies, in circumcision, in their refusal to eat impure food, in the careful slaughtering of the animals for food. Dimly, many of the ancients found out the important truths which the science of modern times has verified and whereof it has given the causes and the "why." We often fail to live up to the knowledge we have, thus allowing an attack of the enemy, disease, which like a good general is seeking the weakest point.

Nature has made good defenses for us, and it is our duty to look to them and to repair the broken-down places. Nature has been outraged, otherwise there would be but little work for medicine in any of its branches.

Nature's laws are continually being broken and the penalty is sure. Hygiene, prophylaxis,—these are the watchwords. Dr. George H. Hardisty, N. Y., says:\* "We have all been surprised at what we deem gross ignorance of dental prophylaxis revealed in those otherwise so highly informed and cultured, but have over-

looked the fact that a perfectly normal and healthy mouth naturally requires no more attention or care than any of the rest of the mucous-membrane-covered organs. Another fact, however, is that a perfectly normal, healthy mouth is one of the most rare of all beauties we behold, but, on the contrary, the mouth is usually the hotbed of bacterial pollution.

"Parental ignorance as to so simple a need as that of oral cleanliness is one of the startling things the dentist has to contend with. See the children that are reared to-day; notice the condition of their teeth and the wrecks of humanity they are, while the parents are oblivious of the consequence of their neglect, paying too little heed to the physical welfare of their own offspring, conditioned largely by the septic character of the bacterial growths, their ferments and toxins that affect the mouth and find their way into the system. . . . With the widening sphere of the dentist's usefulness, the demand for his knowledge of how to prevent certain difficulties and lessen possible recurrences of oral imperfections, etc., has become the order of things. Right here is where the dentist should grow and become liberal in the generous giving from his acquired store of useful information."

"*The gospel of the tooth-brush.*" This phrase, quoted from Booker T. Washington, by Dr. W. F. Litch, is used by him as the text of an editorial article in the December *Dental Brief*, condemnatory of the perfunctory use of the tooth-brush as a part of the morning toilet for cosmetic rather than a hygienic purpose, without any adequate conception either of the true purpose of the act or of the proper method of its accomplishment.

The prophylactic value of the tooth-brush is reduced almost to the vanishing-point, though when properly used it helps to save teeth and hence to promote digestion, and thus to sustain those vital forces through which alone civilization can be achieved or perpetuated.

Dr. B. F. Arrington says the brush-and-water practice, with the aid of finger massage, is preventive treatment both simple and practical, and is a surer means and guarantee of results desired,—well-preserved teeth and gums and freedom from unwholesome taint of breath,—than can be effected by any other line of treatment. Until effort is made intelligently upon conservative lines, we will never know what can be accomplished with tooth-brushes for the preservation of the teeth and gums. There is work before us and the field is broad, that all may work who will. Great stress is laid by recent authorities upon the use of stiff, hard brushes, not alone for the purpose of cleanliness, but as a condition of physiological toughness. Dr. J. W. Wassell prescribes four extra-hard brushes, to be used alternately to prevent the water-soaking to which the brush is liable when used at too short intervals. He says the brush should be applied vigorously and thoroughly five minutes at each cleansing, and twice a day, brushing the gums as vigorously as the teeth, thus supplying the physiological needs of the gingival tissue.

Dr. D. D. Smith, Philadelphia, claims remarkable results in the betterment of tooth-structure through systematic stimulation,



through friction, using pumice or orange-wood sticks with hard pressure, thoroughly polishing all exposed tooth-surfaces at frequent and regular intervals. Dr. Smith's theory is, that admitting it to be a fact that when a tooth, good or bad, hard or soft, is removed from its environments, from the menstuum of the mouth, decay is at once arrested, it follows that enforced and systematic change in the environment of the tooth in the mouth will prevent decay, and will carry with it many other beneficial results,—results obtained wholly through clinical investigations and experimentation. This change in environment is obtained by the thorough removal at frequent and regular intervals of everything,—whether solids, inspissated excretions, semi-solids, or bacterial formations,—from all the exposed surfaces of the teeth, leaving the enamel, or whatever of the tooth may be exposed, thoroughly polished and thus in the best condition to avoid hurtful deposits, and equally to favor all efforts of the patient in the direction of cleanliness. Dr. Smith asserts that the benefits are not confined to the enamel or treated surfaces alone, but that equally pronounced results are apparent in the dentin and cementum.

Through this stimulation of the life forces of the tooth discolorations are removed, and white spots on the labial surfaces of the front teeth resume a normal lifelike appearance. The gum tissue assumes a healthy appearance, the festoons are improved, retarded and erupted processes are hastened, while the general health is benefited through the removal of the excretions of gum and alveolar tissue, preventing the introduction of the toxic matter into the stomach and lungs.

*Adenoids and hygiene.* A condition which we too frequently overlook and yet one we should be prompt to recognize and overcome, is the presence of adenoid growths with the sequence of malformations of the arch, malocclusion of the teeth, lack of mastication, and malnutrition. Malocclusion consequent upon the narrowed superior arch is followed by malnutrition, for children so affected cannot masticate their food thoroughly. Owing to nasal obstructions, secretions are constantly dropping, which affect taste, causing lack of appetite. The air (on account of mouth-breathing) is not warmed and filtered by natural methods; the blood in consequence is not properly oxygenized. In fact, metabolism is interfered with in every way, with the results of ill-nourished, anemic children, often with defective mentality.\*

Dr. M. C. Smith condemns the usual practice of referring such cases to the rhinologist for operation. He says the rhinologist can remove the adenoids, but that is all he can do; the dentist should be prepared to do this and much more. It is as much a dental disease as is the toothache, and in nine out of ten cases the alveolar arch needs to be widened. This will bring down the septum and give better air space. The diminution of air supply caused by the diminished passages, the introduction of air through the mouth on account of the closed nostrils, and the effect upon the digestive apparatus of the dropping of the effete matter from the throat with

---

\*Fannie E. Hoopes, M.D., D.D.S., DENTAL COSMOS, July, 1901, p. 723.

the food supply, together bring on a state of degeneracy, physical and mental, often resulting in the most lamentable breakdown.

In regard to diagnosis, most authorities recommend that it be made by introducing the finger into the vault, and by so doing feeling the glandular mass; but Wendell C. Phillips, M.D., says this procedure is very painful, makes the patient gag and strangle, and also makes the little patient one's enemy for life. Instead, by a little persuasion, one can make a far better examination and diagnosis by means of the tongue-depressor and a small mirror. The procedure is not painful, makes the patient a friend instead of an enemy, and gives confidence to allow any further treatment that may be required. There are many more cases which present symptoms so marked that a positive diagnosis may be made without resorting to either method of examination.

Dr. Phillips says that parents are generally becoming educated to detect the symptoms of these growths; but wideawake dentists have an unusual opportunity to detect these symptoms, and it becomes a duty to add to their existing vocation that of aiding parents to see the importance of subjecting their afflicted children to operative interference and freeing them from these conditions with their long train of attendant symptoms and serious results.

Every advancement in the sciences of medicine and surgery, as well as every increase in the knowledge and efficiency in the individual members of the medical and dental professions, means the saving of human life and the alleviation of human suffering.

*Life insurance and oral hygiene.* The bearing of oral hygiene upon life insurance was ably discussed at our last annual meeting. The editor of the *Dental World* (August, 1901), in a brief report of the meeting, commenting upon this point, said: "This phase of the subject of dentistry is new, but the importance of it is as old and as sure as the value of life."

Observation has clearly demonstrated that nobody is in health who is fed through a diseased mouth. It has been said that more soldiers die of disease than from bullets; it is equally, if not more true, that more men and women die of diseased mouths than from any other cause. It is believed by many medical authorities that nine-tenths of all diseases, excepting those of contagion, are due to the unhealthy condition of the mouth and the nasal passages, the secretions of the mouth and nose when in a state of health being a fortress against the invasion of many deadly germs. It can hardly be doubted that contracted arches are caused by adenoid growths in the pharynx and nasal passages, malforming and contracting the chest.

In the examination blanks of insurance companies you may find such questions as, Did you ever have discharge from ear? We would add, Did you ever have abscess of antrum? They ask, Did you ever have renal or hepatic calculus? We would suggest, Did you ever have salivary calculus? and, What caused it? They ask: Did you ever have dyspepsia? We would ask, What caused it? They ask: Have either of your maternal or paternal grandparents died of consumption? We would suggest: Is your mouth in con-

dition to fortify you against the culture of bacilli? They ask: Have you ever sought or been advised to change climate for your health? We would suggest: How much pus do you swallow each day from old abscessed teeth? They ask: How much do you weigh, and has it changed in a year? How equally important is the query: Have you an impacted third molar, or have your teeth failed to erupt? They ask: When did you last consult a physician? We would add: When did you last consult a dentist? They ask: Do you use intoxicating liquors? They should also ask: Do you use a tooth-brush?

This suggestion is not the first the dental profession has offered for the protection of society from evils. The insurance companies would be stronger and the insured safer to have such safeguards as would better enable them to approximate the longevity of those at risk.

The only desire of those who rank in the medical and dental profession is to have the health of the human body cared for as though it were "the temple of God."

We commend these thoughtful suggestions of the editor of the *Dental World*, Dr. W. H. Weaver, to the consideration of the members of the Committee on Life Insurance.

Dr. Mora says, "If the importance of hygiene was considered in proportion to the services which it renders, it would be the leading science, and everything would be under its supervision. It embraces the study of all that can contribute to the improvement of the mind and body,—for the influence of the mind over the body plays an important rôle in our existence and gives to a man character, more energy, and more stability."\*

Mr. President, we will say in conclusion that if dentists grow to understand prophylaxis and can treat their patients successfully, the demand for dentistry will be very much less than it is now in the beginning of this new century.

(To be continued.)

---

## ONTARIO DENTAL SOCIETY.

THE thirteenth annual meeting of the Ontario Dental Society was held in Toronto, Canada, February 18, 19, and 20, 1902.

### FIRST DAY—*Afternoon Session.*

The president, Dr. H. R. ABBOTT, London, Ont., called the meeting to order at 2.30, and read an address, in which he said that, owing to the Directors of the Royal College of Dental Surgeons of Ontario having conducted their dental convention in Ontario during last July, it was thought wise not to hold a meeting of the Ontario Dental Society last year. It was his opinion that these separate conventions, one in London, one in Toronto, and one in Ottawa, had stimulated many to attend conventions who had not

---

\*Proceedings of the Third International Dental Congress, *DENTAL COSMOS*, July, 1901, p. 764.



done so before. A strong plea was made for a good attendance at the Dominion meeting to be held in Montreal, September 16th, 17th, and 18th, at which an attempt will be made to organize a council which will hold an annual examination, giving the successful candidate the right to practice dentistry in any part of the Dominion of Canada. A feeling reference was made to the death of Dr. W. George Beers, late of Montreal, who was for so many years editor of the *Dominion Dental Journal*. The society was congratulated upon having such an energetic program committee. He believed that this was the best program that had ever been prepared for any meeting of the society. In closing he said that the thanks of the society were due the Toronto Dental Society for having given up its own annual banquet to join with them in a reunion banquet of the Ontario dentists.

C. E. KLOTZ, of St. Catharines, read a paper on "The Treatment of Roots of Teeth with Putrescent Pulp, and the Filling Thereof." The first thing to do is to open up the pulp-chamber and locate the opening into the root-canals with an explorer, then enlarge with a Morey drill. Explore the length, size, and curvature of the canal with a fine, smooth broach, then enlarge, if necessary; use root-canal drills as little as possible. Root-canal cleansers will enlarge a canal without the danger of cutting a shoulder. If any odor still exists wipe out with  $H_2O_2$  and bichlorid 1 to 500, and dress with eucalyptus; after three or four days dry the canal and fill with asbestos fiber and chloro-percha.

Dr. BRUCE preferred formaldehyd where Dr. Klotz used bichlorid, and gutta-percha cones instead of asbestos fiber.

Dr. BAIRD uses aristol with chloro-percha and gutta-percha cones. In cleansing out canals he prefers pyrozone and oil of cloves.

Dr. KLOTZ, in closing the discussion, said he never had acute inflammation following his method of treatment.

Dr. A. W. THORNTON, of Chatham, then read a paper on "The Care of Children's Teeth," stating that he was not sure that the administration of lime-water was not a good thing, though it is sometimes stated to the contrary. The reason given for the so often neglected condition of children's teeth was,—1st. Lack of knowledge of parents and guardians. 2d. Parents do not take children to the dentist for fear of their being hurt. 3d. Many parents cannot afford to pay for dental operations. 4th. Many dentists dislike to work for children. 5th. The same fee cannot be charged for children's work as for that of grown people.

To better the present conditions,—1st. Parents should be educated to know what it means to take care of children's teeth. 2d. Dentists should give children's teeth more and better attention. 3d. The active and intelligent co-operation of the family physician. 4th. Systematic instruction on oral hygiene in the public schools by competent instructors.

#### *Discussion.*

Dr. H. A. CROLL, Palmerston, said the reasons for caring for the temporary teeth were probable death of the pulp, tardy absorption of roots, consequent late eruption of permanent teeth, and a prob-

able irregularity. Premature extraction causes a non-development of the arches, a crowding of the permanent canines by the bicuspids owing to the forward movement of the permanent molars. Temporary teeth left too long often crowd between permanent ones causing decay. Neglected teeth, causing pain, tend to educate the child to bolt his food, with alimentary troubles following. The pain is a strain to the nervous system. More trouble comes from a lack of knowledge on the part of the parents than from carelessness. More effort should be made to educate the parents.

J. E. WILKINSON, D.D.S., M.D.S., Toronto, continuing the discussion, said that an effort was being made to have the Legislature of Ontario to pass a bill enforcing the inspection of the public school children's teeth. He believed that temporary teeth should be as well cared for as the permanent.

Dr. SPARROW, of Toronto, called attention to the difficulty of knowing when a permanent tooth is likely to follow the extraction of a long retained temporary one. The X-rays had recently come to our assistance in these cases.

Dr. MITCHELL. I never lose an opportunity of taking care of the children's teeth when they are brought to me. If the child is suffering from toothache, or whether it is suffering or not, the first object I seek to attain is to gain its confidence, so that it will not be afraid to come back to me. They will come back without their parents, even at the age of three, four, five, or six years. They feel as if they were men and women when they can do that, and I find that I am able to operate much more successfully upon a child when the father or mother is not present. To show you the importance that I lay upon this subject, I happen to have in my pocket, and have been carrying for some time, a temporary tooth upon which I put a gold cap before the child was three years old. I put four caps on the four incisors. Now, that child comes to my office yet, and is not a bit afraid of me, in fact, loves me next to his own parents. I believe that I succeeded in doing this without much pain. That child has now reached the age of eight years, and he has shed the most of the temporary teeth, of which I have one, and his other teeth have come in proper shape. When he first came to me he was unable to bite a piece of bread with those incisor teeth, and I feel that I have gained the gratitude of the parents and of that child.

Dr. PEARSON. When the root-canals of temporary teeth are filled, the roots do not absorb; in such cases how are we to know when to extract?

Dr. BENTLEY thought the keynote was struck when the essayist said that the family physician should be interested in the condition of the oral cavity of children, as it is he who has the opportunity of calling the parents' attention to faulty conditions.

Dr. NOYES, of Chicago, said dental education in the public schools or education through the co-operation of the medical profession is all-important, but a great deal can be done by talking with the parents we work for about their children's teeth. The one great

difficulty in dealing with children is the baneful effect of their having heard so many stories of the suffering in the dental chair. There would be little or no pain attending dental operations if the children saw the dentist early. The doctor cited a case where a man twenty-three years old had lost only the temporary centrals. In such a case it would have been very unwise to have extracted all the temporary teeth at ten or twelve years of age. It is doubtful if it is ever advisable to apply arsenic to the pulp of a temporary tooth. One of the very best filling materials for temporary teeth is oxyphosphate of copper. It will last for a good number of years and is very easily inserted.

Dr. J. B. WILLMOTT. Unfortunately medical schools in this country give little or no instruction to their students on the relation that the condition of the oral cavity bears to the general health. Medical students should have dental lectures and then they would be in a position to assist the dental profession to educate the public in the matter of the care of children's teeth. It is patent to us that children's teeth decay, and that if they are extracted all the evils of such practice must follow; while if they are not extracted they must continue to be a menace to the general health of the patient. Fully fifty per cent. of the children with decayed teeth have their health seriously affected. They are small of their age, and weak mentally and physically. Parents are not aware of the fact that their children's poor health may be due to the condition of the oral cavity. This aspect of the question should be looked into by both physician and dentist.

Dr. THORNTON, in closing the discussion, said that many parents were not able to pay for a dentist's services for a large family, and unless an effort were made this great class must go unattended. He said that many physicians pretend to know more about the teeth than the dentist does.

Dr. M. A. MORRISON, of Peterboro, then read a paper on

#### SOME THINGS DENTISTS KNOW LITTLE ABOUT.

(1) *Heredity and its relation to diseases of the dental organs.* The "American System of Dentistry" says: "Through the law of inheritance, the teeth are the unfortunate recipients of a legacy of disease in many forms, the tendency of which is to intensify in the course of transmission." Dr. Williams, in a most excellent paper on "Pathology of Enamel," said: "I believe that if the environing conditions of the teeth are such as to favor the development and activity of acid-producing bacteria, and if those bacteria are permitted to become attached to the surface of the enamel, it is doomed, although it may be the most perfect that was ever formed. On the other hand, if those environing conditions are not present, the worst enamel will not decay." And I think we have all accepted Dr. Williams' theory. If, then, we place these two statements side by side, and make the one conform to the other, "where are we at?" What has heredity to do with caries of the teeth? Or what part does it perform in forming that environment? It may be one of the greatest enemies of the human teeth. If so, cannot the tendency



to that environment be changed, and so produce a generation of people whose teeth will be free from decay?

To illustrate from practice:

(A) A family,—father, mother, and two sons. Father aged forty-nine, teeth very poor, ten or eleven lost, remaining ones nearly all filled, some with two or three fillings. Mother at twenty was wearing upper denture; at thirty-seven only seven lower anterior teeth left, and most of these with fillings. Boys aged, respectively, fifteen and eighteen, each have from forty to sixty fillings and two or three crowns; not a tooth in mouth of either unfilled, but strong and healthy.

(B) Parents over sixty years; in both the teeth are complete, with scarcely any fillings. Family, three boys and two girls, aged from twenty-four to forty; scarcely any fillings. Oldest girl has had two third molars extracted. Girls delicate, boys robust.

We have all seen the stamp of heredity on the irregularities—the size, shape, color, etc., of the teeth, and we have also seen it on that disease, which Dr. Black claims is responsible for the loss of more teeth than the forceps—pyorrhea alveolaris. It would appear that we have in this disease a type that is transmitted from parent to child. We see it present in whole families, even families that have been brought up to cleanliness and care of teeth, never allowing tartar to accumulate, and yet before middle life their teeth begin to protrude, separate, elongate, and finally become an irritant in the jaw, necessitating extraction. This type of the disease is the most difficult to treat and almost impossible to cure permanently. The question now arising is, Is this a germ disease? If so, is it infectious? This is another line of thought our scientific men have failed to investigate in such a way as to reach a reasonable and satisfactory verdict. True, men have scratched on the surface; but what we need is rock-bottom foundation, so that we may be able to intelligently enlighten our patients, and also give them skilled treatment.

(2) *Amalgam and its relation to the general health of the body.* Many believe that amalgam has no bad effect on the general health, but two cases came under the writer's notice which showed him that amalgam in many cases was detrimental to good health. Two patients who had suffered for years soon recovered when amalgam fillings were replaced by gold and cement. This question has been overlooked by the profession.

(3) *Electric currents of the oral cavity.* At present very little is known about what kind of battery is made when gold, silver, copper, tin, mercury and carbon are all placed in an acid saliva of the oral cavity. Every dentist has noticed the pain a patient often experiences when two metal fillings come together in the mouth, yet little is known of what effect the current in the teeth or the fillings has on the patient.

(4) *Pregnancy and its relation to dental caries.* One of the most trying times on the teeth is during the period of gestation. At this time the mouth seems to be in the most favorable condition

for the propagation of caries. But are we doing all we can to change the environment? We may be using all the knowledge we have on the subject, but that is not sufficient. We should investigate more in this direction, and if possible save our mothers, wives, and daughters from anxiety, suffering, pain, and from the necessity for artificial teeth.

### *Discussion.*

Dr. J. SLEET, of Fergus, in opening the discussion, said it was hard to take the statement of Dr. Williams that any tooth, no matter how well developed, would decay under favorable conditions, or Dr. Black's dictum, that the variation in the quantity of calcium salts is insufficient to account for the difference of decay in different or the same teeth at different times. All must admit that a well-developed tooth under similar conditions is not so likely to decay as is one defective in construction. But, after all, the environment is the key to the situation, and any permanent progress made in preventing caries must be in the direction of discovering an antagonist to those organisms that have the power of forming gelatinous plaques on the enamel.

Dr. HERMISTON, of Picton, gave it as his opinion that inasmuch as many peculiarities of development and diseases are transmitted from generation to generation, it is quite possible that the tendency to the decay of the teeth is transmitted in like manner, and that really perfect oral hygiene in time might overcome the tendency to decay. Dr. Hermiston said, in reference to amalgam and the general health: "I am quite ready to admit that amalgam is very much abused as a filling material, but I am not so easily convinced that it has produced any injurious effects upon the human system. The ordinary amalgam filling contains silver, tin, perhaps a little gold, a little platinum, or a little copper. Any one of these metals in the amount in which we find it in patients' teeth could in no way affect the patients' health. To what then can we ascribe any ill effects, if ill effects there are? It must be to the mercury alone. Authors with unqualified assertion state that mercury in the metallic condition is non-poisonous, in fact has no therapeutic action on the human system, and that it is only in the form of vapor that its ill effects are produced. In a hardened metal filling there is no free mercury; all of this metal is in combination with the other metals of the alloy. In this condition then, the mercury can do no harm. The condition of vaporized mercury is never attained in the human mouth. This would be absurd, as mercury requires a little over 660 degrees F. to sublime.

Burchard says: "Amalgam fillings in contact with dentin in which putrefaction is in progress are frequently discolored by the formation of black silver sulfid, and perhaps salts of mercury, the dentin being stained black." Presuming that this is true, if the filling were to be removed and the disintegrating dentin thoroughly excavated, and a new and perfect amalgam filling inserted, would not the patient's health be insured just as certainly as though we had inserted gold? When we meet with such cases of supposed mercurial poisoning are we not justified in concluding

that they are hallucinations rather than idiosyncrasies?—hallucinations that to the operator are a financial success, and yet such as we should seek if possible to dispel if we are to act honestly with our patients.

Were we to attempt to account for all the hallucinations—for such we prefer to call them—of humanity we would have a never-ending task. There are cases on record where diseases of prolonged duration have been suddenly cured as if by magic. We cannot doubt the cure, but we are inclined to think that the disease was wrongly diagnosed, and that the disturbance was in the gray matter rather than in some of the other organs.

Dr. R. E. SPARKS, M.D., L.D.S., of Kingston, then read a paper as follows:

#### INDICATIONS FOR EXTRACTING THE "SIXTH-YEAR MOLARS."

The indications for extracting may be described as two-fold: (1) Where the operation would correct irregularity, and (2) where it would relieve suffering. But in considering the subject of indications for extracting the first permanent molars, one cannot easily dissociate it from that of indications for their retention. The fundamental principle of our profession is conservative dentistry; therefore, while there may be indications for extracting these molars, there may be contra-indications demanding their preservation. For instance, the case of a child whose mouth is deformed by the habit of thumb-sucking—the upper front teeth drawn forward while the lower front teeth are pressed backward. We will suppose the first molars in this case all equally diseased; indications would point toward the removal of those in the upper jaw, while those in the lower jaw should be saved if at all possible. These molars being the first of the permanent set to erupt, and consequently there being nothing to prevent their assuming their proper place in the arch, it is seldom necessary to remove them to correct an irregularity in themselves. But a crowded condition of the arch, which necessitated the extraction of some teeth, would be an indication for their extraction if, by their removal, some better teeth might be retained. Under this head might be considered cases of badly-diseased first permanent molars in the mouths of young children, which by their removal would prevent irregularity and malocclusion by affording more room for the teeth, which would otherwise be erupted anteriorly and posteriorly. By the extraction of these teeth before the eruption of the bicuspid and second molars, the latter will close together, thereby the spaces occupied by those teeth of poor quality will be occupied by those of better quality. Should the case under consideration not present until after the eruption of the bicuspid and second molars, it might be highly desirable to preserve the first molars, as their removal might allow the adjoining teeth to topple over toward each other, causing a serious malocclusion. Especially is this likely to occur if the extraction takes place in one jaw without a corresponding loss on the same side of the opposite jaw.



We will now consider the subject under its second head: Extraction to relieve suffering.

This is more frequently the case in children than in adults. Perhaps no teeth of the permanent set need as much care for their preservation as the first permanent molars, and there are none that receive so little attention. They undergo the formation process at an age when the child's health is most subject to disturbing influences. They are erupted before the child is old enough to care for his or her teeth, and if the parents' attention has been called to them they have mistaken them for temporary teeth. Since many erroneously suppose it to be unnecessary to fill temporary teeth, and also mistakenly regard as belonging to that set the first permanent molars, they are frequently past redemption before the dentist sees them. Such teeth, especially if abscessed, should be extracted, unless some contra-indications prevail.

A strong indication for extraction is indifference on the part of the patient. Cases often present for extraction which should be saved, but the subject absolutely refuses to have the tooth dealt with other than to have it extracted. This indifference often assumes another aspect—the patient is frantically anxious to have the tooth saved.

It is impossible to lay down a set of rules that will cover all cases. The dentist will be continually called upon to exercise his judgment.

#### *Discussion.*

Dr. H. A. PULLEN, of Buffalo, in opening the discussion, said: Before discussing in detail the indications for extraction of the first permanent molars, as pointed out by the essayist, I wish to mention some of the points concerning these teeth which prove them to be the most important of the permanent teeth to preserve, at the time usually advocated for their extraction.

First. They are the first of the permanent teeth to erupt, and during the period of removal of the temporary dentition, afford the broadest and best masticating surface in the mouth.

Second. By reason of their great strength and size, these are the only teeth that can serve as a means of preserving the normal relationship between the jaws, and consequently the symmetry of the face at a time when no others of the permanent set, except the incisors, are erupted to occlusion.

Third. Their presence is an aid in securing developmental pressure in the development forward of the jaws.

Fourth. Statistics comparing the relative frequency of caries between the first and second molars prove the second molar more frequently carious than the first.

Fifth. The first molar, on the average, is a better constructed tooth than either the second or the third molar.

Sixth. Its extraction is the cause of more cases of irregularity than is generally supposed.

This last statement is in almost direct contradiction to the first indication for extraction which the essayist mentions, save in so far as he qualified it by exceptions; but in my opinion, from the exami-

nation of a great many cases in practice, I believe the extraction of this tooth to be the cause of a very large percentage of irregular teeth. It is utter folly to believe that the symmetrical extraction of these teeth before the eruption of the second molars will give more room in the jaws for the teeth "to be erupted anteriorly and posteriorly." The jaw is smaller and the number of teeth is less than it otherwise would have been. Irregular teeth do not straighten themselves simply because the first molars are extracted. Extraction of the first molars will many times shorten the bite, allowing the jaws to come closer together, the bicuspid not being allowed to erupt fully, the undue pressure on the upper anterior teeth causing their protrusion and the lower to come in contact with the gums. Even when symmetrical extraction of the first molars has been performed with the view of their displacement by the second molars, it happens more often than otherwise that the second molars tilt forward into space, and not only form lodging-places for food, but cause some serious malocclusion.

The second indication for extraction which the essayist names *e.g.* "where it would relieve suffering," it seems to me would be an excuse for the extraction in a majority of these cases presenting, for they belong to the class of patients who neglect the deciduous teeth and first molars until the pain of the toothache drives them to the dentist.

There are chances of these patients suffering more in after years from the extraction of these teeth occasioning faulty occlusion and impaired mastication which it would be impossible to relieve. Thus the extraction for the relief of the suffering would be but temporary. I believe that we can get around this difficulty with proper treatment.

It seems to me that if we let indifference upon the part of the patient as regards the saving of a first molar affect our judgment or deter us from doing the right thing in the case, even though we lose a dollar or two, we are not holding up a standard which is going to benefit our patients or our profession. It is our business to advise correctly if we can, and if patients do not choose to abide by it, then let them go elsewhere where their every wish may be gratified. The future of our profession depends upon the conservation of the dental organs, and a small temporary pecuniary loss for giving the proper advice on the subject of extraction will weigh but little compared with what the profession will gain in the long run by our holding up the standard.

I do not mean to be understood as saying that the first molars should never be extracted under any conditions. If these teeth are in such a condition that they cannot be treated, especially if they are destroyed so early in their career that the roots have not become fully developed, extraction is indicated. Sometimes, however, it may be possible to treat a first molar whose roots are not fully developed, and we may find it advisable to do so, even if they last only a few years, if we find that the preservation will prevent an irregularity. However, if the extraction of one or more first molars becomes a necessity, unless the second molars are erupting and

the conditions are favorable for a continuity of the relationship between the jaws, I believe that we should take measures for preserving the proper relationship until the second molars erupt to occlusion.

If the second molars are already erupted, when extraction of the first molars is inevitable the space should be retained or filled with an artificial substitute to prevent serious malocclusion. Of course the almighty dollar is a factor in these cases, and each of us knows how much time we are willing to give away in treating and preserving pulpless first molars. For myself I think we gain in the long run by giving the best possible service in every case, whether to rich or poor; the knowledge of having done the right thing is a soothing balm to the conscience.

As regards symmetrical extraction of the first molars, I must say that I am not a believer in its so-called beneficial results. If the advocates of this method placed as much value on the individual tooth as I do, I am sure their attempts at improving on nature would very shortly stop.

The essayist speaks of the case of the thumb-sucker as being a case where extraction was indicated in the upper arch, but not in the lower. This statement I cannot let go unchallenged, as we often find the relations between the jaws of the thumb-sucker normal mesio-distally, with in consequence no indication whatever for extraction, the only treatment necessary to restoring normal occlusion and harmony of the occlusal planes being a slight operation on the anterior teeth immediately concerned with the habit.

The essayist has enumerated two distinct reasons or indications for such extraction, viz, to correct irregularity and to relieve suffering. I am glad to know that he goes no farther. The two reasons are such as might be given for the extraction of any other tooth in the arch. Still, I feel very much like even more restricting the indications for removing such an important tooth. Very rarely indeed, if ever, have I been persuaded to extract this molar to correct an irregularity. The case cited by Dr. Sparks is no doubt one that might sometimes offer a legitimate excuse. In fact, I endeavor to maintain in my practice an unwritten law that it is only after the disease and the operator have had their struggle to a finish, with the disease still unconquered, that this tooth is handed over to the forceps for extraction.

The first permanent molars take their places in the arch at an important period in the physical development of the boy or girl, at a time when the being is full of life and activity, and consequently in the need of nourishing and properly masticated food. The temporary molars are now, in many cases, gradually breaking up and becoming of little use in masticating, so that the first molar is more intended by nature to assume a responsible position, not only as the pillar of mastication, but also to preserve the proper contour and character of the face by keeping the jaws sufficiently apart till the second molars come to the rescue. So when these molars are removed, say at the age of seven or eight, the patient has not only to contend for some years against defective mastication



tion and a consequent impaired digestion, but there is also frequently noticeable a lack of character in the general make-up of the face.

Again, if they are not removed till after the eruption of the second molars, we have as a result the malposed or tilted tooth on each side of the space—a condition of affairs which every experienced and conscientious operator looks upon with regret.

There is no doubt, if these molars have to be removed, that the time for the operation is a few months previous to the eruption of the second molars. They will then have given several years of valuable service in masticating the food and building up the contour of the face. Also the second molars will before erupting have an opportunity of traveling forward and at least partially filling the space of the departed life. However, I have but one word of advice as to the extraction of these important teeth, and that is, Don't.

I have taken the liberty of getting the opinions of two or three prominent members of the profession on this subject, which with your permission I will quote.

Dr. R. Ottolengui, of New York, writes me in this way: "It is a very rare thing for me to extract permanent first molars. If the teeth have been badly neglected, so that early in life they become pulpless, and especially if they are already abscessed, I should consider it best to remove them. I should almost never remove one in which the pulp could be preserved alive, and have never done so for purposes of regulating.

Dr. J. Taft, Ann Arbor, gives his opinion as follows: "Permit me to say that I regard it as a disaster for one to lose the permanent first molar tooth. Such a breach can never be wholly repaired, either by transplanting or by the insertion of an artificial tooth. The removal of this tooth in every case, in a large degree disturbs the masticating ability of the denture."

Dr. C. N. Johnston, Chicago, speaks very emphatically on the subject. He says: "I should endeavor to save the permanent first molar even if I had to crown it early in life, and above all things I should aim to keep it sufficiently built up, either by crowning or filling, so that it would hold the jaws apart and add character to the face."

Dr. Peirce: "Before the permanent first molars are extracted there should be some assurance that there are wisdom teeth to erupt."

Dr. Steele: "There are many people who wear artificial teeth and are proud of them, and are not prepared to pay very much to have their children's teeth attended to. And, anyway, what is the use of fixing up first molars if the patient is not prepared to have the other teeth fixed."

Dr. Gordon McLean believes in symmetrical extraction.

Dr. Cavanaugh: "The first thing to do is to educate the dentists."

(To be continued.)

## UNION MEETING OF THE MARYLAND STATE DENTAL ASSOCIATION AND THE DISTRICT OF COLUMBIA DENTAL SOCIETY.

THE annual union meeting of the Maryland State Dental Association and the District of Columbia Dental Society was held in the amphitheater of the Dental Department of the Georgetown University, Washington, D. C., June 6 and 7, 1902.

The first session was called to order at 10 o'clock Friday morning, June 6, by Dr. W. N. Cogan, Washington, D. C., chairman of the joint executive committee.

Father Buckley offered the opening prayer.

The societies then listened to an address of welcome by Dr. J. H. London, Washington, D. C., president of the District of Columbia Dental Society. The address was responded to on behalf of the visiting members by Dr. Clarence J. Grieves, Baltimore, Md., president of the Maryland State Dental Association.

Dr. CLARENCE J. GRIEVES, as president of the Maryland State Dental Association, delivered the following

### PRESIDENT'S ANNUAL ADDRESS.

There exists an old adage which teaches that "It is safer to be an historian than a prophet." John C. Calhoun, one of the most profound thinkers of his time, in the Senate discussion of the pending purchase of the Oregon tract, said: "The idea is both preposterous and inane; why, you will bargain for California next, and what possible use could we have for the Pacific slope? If Oregon should become a part of these United States, her representatives traveling the limit of twenty-five miles a day, would just sit in this august body two days, and their travels would consume more than their stipend *per diem*." These words, of less than a century ago, we read in the white light of expansion, and realize with Mark Antony,

"In nature's infinite book of secrecy,  
A very little I may read."

So you are not to be troubled with a roseate horoscope of our profession this morning, but simply with the mention of a few facts:

"'Tis greatly wise to talk with our past hours,  
And ask them what report they bore to heaven,"

says Young, and may we not briefly con a few of the good things which have transpired since last we met here three years ago?

Foremost amongst these, dental education has taken a step "to the better," and a four-year course, with more exacting entrance requirements, now confronts the aspirant for the degree. Truly, "Too low they build, who build beneath the stars!"

With the tendency toward the utilitarian in dental training and the International Dental Federation and its definition of the dental curriculum, so ably announced by Sir Michael Foster, we are indeed "on goodly times."

A very apparent advance in the requirements of the state examining boards and a growing reciprocity of state laws have accomplished much in molding the *personnel* of the "body licentiate."

The recognition of dentistry as a learned profession, both by the professions and the laity, is now no chimera, and it is due, we submit, to the greater growth of individual professional sentiment and a justifiable self-respect, which rightfully urges ours as a specialty ranking any of the many in medicine. Note the growing tendency of the dentist to look farther than the merely dental tissues for cause and effect in his etiology, and then ask if this be not more of a "stomatologist" than a "dentist."

The government has finally but partially recognized our profession in the "contract dental surgeon" of the army; let us be sanguine for the full fruition of our good friend Dr. Donnally's efforts for a dental corps *per se* in the navy with the status of the medical corps.

We have had a much-needed lesson in oral prophylaxis, and, if not bearing the fruit desired by its more enthusiastic sponsors, it has at least emphasized again that trite precept, a motto our profession might well write o'er its threshold, "Cleanliness is next to godliness."

That erstwhile elf of dental pathology, so-called pyorrhea alveolaris, the bearer of many hyphenated names, still celebrates an occasional christening,—but with this distinct advance, that its etiology becomes yearly more apparent. Would that the therapy kept step with the etiology!

The material porcelain, in the operative field, is unquestionably spanning spaces which three years ago were approached by both patient and operator with a true appreciation of the lines from the old hymn, "An aching void this world can never fill." Yet this it does, less strenuously, with infinite dispatch and with results esthetic and apparently permanent.

It would seem that modern crown- and bridge-work had been tempted into vulgar gilded display as by some Cymbeline, who said,

"There is gold for you; sell me your good report."

Certainly this is being daily exemplified, and the remedy is with us in the more general utilization of porcelain in this art.

We note a great advance in the results of the application of scientific laboratory methods of research to the dental structures, the surrounding secretions and oral conditions, as well as to the materials, both medicinal and mechanical, with which these lesions are corrected; the operator has thereby gained greater assurance in his daily task.

The foregoing, gentlemen, are but a few of the items passed by "the inaudible and noiseless foot of Time." We have the effect,—and to my mind the primary cause for these, as well as for all other steps to the fore in our profession,—in the fraternal feeling, the friendly rivalry for merited position, the healthy breadth of view, the correlation and correction of ideas, the demonstration of individual methods,—in short, the postgraduate schooling, in this day of postgraduate instruction as developed in the well-planned dental meeting. No one can deny that we, whose daily task tends to narrowness, are the better and broader for a few days' dental



conviviality, whether spent in the "Faculties," the "Examiners," the "National" or the local society meeting.

The resultant ethical good to the profession, aside from the individual, is by no means the lesser portion. Meet your brother, know him personally, and when possibly later his professional ability is questioned,

"The artful inquiry, whose envenomed dart  
Scarce wounds the hearing while it stabs the heart;  
The guarded phrase whose meaning kills, yet told  
The listener wonders how you thought it cold,"

is left unsaid; you respect more fully yourself in respecting him.

Discussions in dental associations assembled are productive of the greatest good. Frequently they furnish an arena, a veritable riding-school, littered with many hobbies, ridden to the death. Frequently they follow the lines of Goldsmith's boastful parson,

"Who owned his skill,  
For e'en though vanquished, he could argue still."

But more frequently the war of words is on scientific lines, and the facts developed are the better retained for the heat of argument.

Last, but by far not the least, the clinics and exhibits, teaching methods often surprisingly superior to our own, when absorbed, visibly shorten the tiresome dental day.

Those who habitually absent themselves from this virile contact with their brethren, soon live professionally, at least, "suckled in a creed out-worn," and are doomed to find ere long "how use doth breed a habit." When the absence is enforced, they are to be pitied; when from neglect, not only the absentee, but the entire organization pays the penalty.

Your retiring president some years ago referred to certain "barnacles on the good ship Dentistry,"—and so it is, with this addition, that while the veriest ocean tramp that ever smoked a stack does occasionally get her hull scraped, it occurs to the good old dental ship but rarely.

Pertinent were the remarks of a member of a state society relative to non-members in the state. He said, "If they know more than we, let them join, and teach us something; if they know less, let them join, and in turn be taught."

Finally, gentlemen, as the professional remedy for "quackery but half forsworn," for "narrow views and sordid methods," and even for "carking care and trouble not all our own," allow me to recommend the dental meeting, taken not too seriously, but always remembering that "we receive but what we give."

Dr. Grieves then took the chair, and the report of the committee on Dental Legislation was called for. There being no report from this committee,

Dr. WM. A. MILLS, Baltimore, Md., read the following paper:

#### ANESTHESIA.

Notwithstanding that very great progress has been accomplished in many branches of medicine, no advance, or very little, has been made in anesthesia.

Of late, the administration of nitrous oxid with oxygen, and nitrous oxid with ether, for general anesthetic purposes, has been very much lauded by its advocates,—principally physicians and surgeons, particularly those residing on the other side of the Atlantic. With a very few, nitrous oxid with chloroform has been recommended.

As far as the dental practitioner is concerned, nitrous oxid with oxygen is no improvement upon the general anesthetic effect of nitrous oxid alone, or mixed, as need requires, with ordinary air; when thus administered by an intelligent and skillful operator, all cyanotic conditions are easily prevented, at the same time doing away with the addition of a very cumbersome machine to the present unsightly apparatus. More important still is the danger of overstimulation or excitement, followed by collapse, or dissolution,—two deaths having been recently reported in the medical press.

If the harmlessness of nitrous oxid with ether as a general anesthetic is to be gauged by the number of deaths charged to its credit, as reported in the past twelve months, and in comparatively so few administrations, advice is given to let it alone and leave it to others, supposedly more competent and free from the law, to experiment with such a dangerous combination. Strange as it may seem, the cause given for all the deaths reported was not the agents used, but the accidents were, in all cases, attributed to something else.

Nitrous oxid with chloroform is now being used by a few nose and throat specialists, and so far no deaths have been reported. This combination has been for many years known as "vitalized air," and used entirely by the ignorant and advertising quacks. Why no deaths have occurred from its use must be because those using it have been blessed with "a fool's luck," or else there is something in it of real value.

The latest for general anesthesia comes from Germany. Dr. Roth, of Ludbeck, gave a clinic in which he used very successfully chloroform with oxygen. With this he claims to anesthetize patients with very weak hearts, and without the risks attending the use of chloroform alone, or mixed with ether.

With the introduction of cocain, it was imagined that the perfect local anesthetic for the painless extraction of teeth, and for minor surgery, had been discovered; but while time has proved that cocain has its advantages, it has also demonstrated that it is a dangerous drug, and should be used by only the most careful and experienced operators.

At the last union meeting a recipe was given for a local anesthetic, the basis of which was cocain, special attention being called to the fact that it was perfectly safe, because it called for *one grain of salt*. Had the opinion of the majority present been expressed, it would have been written thus: In place of writing  $\mathcal{R}$ —Sodii chloridi, gr. j, the following would have been inscribed at the bottom of the formula in block letters: "Sig.—Cum grano salis."

Orthoform, chloretone, etc., have been also used, all of which have more or less minor good points, and so far no deaths or ill effects have been reported.

"The introduction of local anesthetics into dental practice has probably not been an unmixed blessing. It has certainly enabled the unmitigated liar, with some show of truth, to add largely to his armament of deception, and has impressed the innocent patient, before the operation, with the confiding belief that painless dentistry is an accomplished fact. It leads, therefore, to so-called quackery and to expectations on the part of the public that can only be partially fulfilled, and in some cases to possible damage suits for breach of contract." At present there is still wanting an agent for both general and local anesthesia,—one which is absolutely free from all possible danger and perfect in its adaptability to dental needs.

In the use of any means for general or local anesthetic purposes, which may have a depressing effect upon the heart's action, the anesthetist should have more than a superficial knowledge of general medicine, to enable him to diagnose lesions of the heart, brain, or kidneys; and a thorough understanding of the means used for resuscitation in case of threatened collapse; otherwise he can never hope to succeed in the highest degree, or serve his patients the most intelligently. "To bring a living being to that borderland in which life in many respects so simulates death, should at no time be a fool's occupation."

There was no discussion of Dr. Mills's paper.

Dr. A. J. BROWN, Washington, D. C., read a paper on "The Brophy Operation for Cleft Palate," with exhibition of photographs of cases.

After referring to the history of this surgical procedure, quoting from Dr. T. W. Brophy's paper on "Surgical Treatment of Palatal Defects" (see DENTAL COSMOS for April, 1901, page 317), the author stated that Sir William Fergusson made the first attempt to obviate the cutting out of the sutures used in approximating the separative edges of the cleft. He also gave the method advocated for the same purpose by Dr. Agnew, of Philadelphia, which consists in dividing the tensor palati muscles as they pass over the hamular process of the sphenoid bone. He then described a successful operation performed by himself upon an infant, following Dr. Brophy's method, which latter we do not think necessary to again describe in this connection, as a full description of Dr. Brophy's technique has already appeared in this journal, as already referred to.

#### *Discussion.*

Dr. H. C. THOMPSON, Washington. I wish to thank the gentleman for his very valuable paper, and to commend him for the amount of work he has expended upon it. I shall comment only on certain portions of the essay. In the beginning of his paper he said that the ideal time for the dental profession would be when we were looked upon and would be a part of the grand old medical profession. For my part, I have no ambition that way whatever. My ambition is along the line of making the dental profession entirely separate and distinct from the medical. We have the



material and the men to make it so, and I hope to see the time when we shall stand entirely alone. We need not ride any horse but our own, and ours is as speedy a steed as that of the medical profession. In relation to the subject of the paper, I have been studying the operation considerably, and am very much interested in it,—first from the fact that it has opened up to surgeons by means of dentistry a field in which they have very rarely worked before. The dental surgeon first performed it, and is now doing much of it. In relation to the operation itself, I cannot speak from personal experience. I get a good many of the unpleasant operations of dentistry, but I have never had this one, although I have followed Dr. Brophy and have always been greatly interested in his work. With reference to the case referred to by the essayist, the part I cannot understand is the premature eruption of those teeth at five months. Where the stimulus came from to bring that about I cannot understand. The value of this operation of Dr. Brophy's to the human family it is simply impossible to calculate, and the value of the operation to the reputation and character of the dental profession is beyond computation.

Dr. WM. A. MILLS, Baltimore, Md. I enjoyed the paper very much, but I cannot agree with my friend who has just discussed it, especially with reference to our not being a part of the medical profession, yet I agree with him fully in his assertion that we have made greater strides and have advanced more than that profession in general practice. All of us have not had the opportunity to perform a like operation, but many would be glad to do so and be contented to perform it as successfully as Dr. Brown has done.

I wish to call your attention to a case of Dr. A. J. Volck's, of Baltimore, Md. The man's voice could scarcely be heard, and only his wife could understand anything he said. He had borne this affliction for twenty years. He had consulted the best surgeons—had been treated both surgically and prosthetically, but had reaped no benefit. Even Dr. Kingsley, of New York, had failed. He came to this city and consulted Prof. Tiffany, who after examination told him he could do nothing for him, but he would take him to Dr. A. J. Volck, of Baltimore, whom he knew could give him relief if it was possible for anyone to do so. Dr. Volck on examination found a large cleft extending from the central incisors backward through both hard and soft palates. No teeth were found in the mouth, except two third molars in the lower jaw. These he found were strong and healthy, and well adapted for a strong foundation for attachments to hold an obturator. He made gold caps to fit and cemented them in place; over these he fitted removable telescope crowns; to these crowns he soldered hollow crescent-shaped boxes to receive the lower ends of strong gold springs, and to prevent chafing of the soft tissues. To the upper ends of the springs he fastened the appliance to close the cleft. When the obturator was placed in the man's mouth, Dr. Volck asked him, "Where are you from, sir?" He replied in a clear and distinct voice, "I am from North Carolina." I relate this case with the hope that it may be of some benefit to others in cases of this kind.

Dr. BROWN, Washington. I have nothing to say in closing the discussion except that I agree with my friend that the profession has been standing alone for some time, but I still advocate its being a specialty of that grand old profession that has stood the test of ages. So far as the operation is concerned, I tried to have the patient here to show you, but it was not convenient. I have some of those teeth that Dr. Thompson referred to, that were extracted by me, and I will be glad to show them to him at any time.

On motion the subject was passed.

(To be continued.)

### WISCONSIN STATE DENTAL SOCIETY.

At the thirty-second annual meeting of the Wisconsin State Dental Society, held in the Hotel Pfister, Milwaukee, July 15, 16, and 17, 1902, the following officers were elected for the ensuing year: T. M. Welch, Waupun, president; F. D. Brennan, Ashland, first vice-president; A. G. Fee, West Superior, second vice-president; W. H. Mueller, Madison, secretary; Adolph Gropper, Milwaukee, treasurer.

The next meeting will be held in West Superior, beginning the third Tuesday in July, 1903.

W. H. MUELLER, *Sec'y.*

### TENNESSEE DENTAL ASSOCIATION.

The thirty-fifth annual meeting of the Tennessee Dental Association was held at Mont Eagle, Tenn., July 8, 9, and 10, 1902, Dr. J. T. Meadors presiding.

Thoughtful papers, heated discussions, interesting clinics, a pleasant place of meeting, and a good attendance made this one of the most interesting meetings held for several years. Six new members were added to the roll, and several absentees sent in their dues, thus showing an increased interest in association work.

A fund was appropriated and a committee appointed to co-operate with other societies in the matter of securing aid from the Carnegie Institute at Washington, D. C., to assist in scientific research along certain lines of special interest to the profession.

The following officers were elected for the ensuing year: W. K. Slater, Knoxville, president; R. Boyd Bogle, Nashville, first vice-president; W. P. Menzies, Dyersburg, second vice-president; A. S. Page, Columbia, recording secretary; J. T. Meadors, Columbia, corresponding secretary; J. D. Towner, Pulaski, treasurer.

Executive Committee—J. W. Peete, chairman, Memphis; A. R. Melendy, Knoxville; J. R. Beach, Clarksville.

Chattanooga was chosen as the next place of meeting, the choice of date being left with the executive committee.

A. S. PAGE, *Sec'y.*

## NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

## ELECTION OF OFFICERS.

At the annual meeting of the National Association of Dental Examiners held at Niagara Falls, July 25 and 26, 1902, the following officers were elected: Charles A. Meeker, Newark, N. J., president; Burton Lee Thorpe, St. Louis, Mo., vice-president from the west; J. A. Libbey, Pittsburg, Pa., vice-president from the east; J. A. Hall, Collinsville, Ala.; vice-president from the south; Joseph P. Root, Kansas City, Kans., secretary. Committee on Colleges—C. C. Chittenden, Madison, Wis.; J. A. Hall, Collinsville, Ala.; H. J. Burkhart, Batavia, N. Y. Committee on Conference—G. E. Mitchell, Haverhill, Mass.; J. G. Reid, Chicago, Ill.; J. A. Libbey, Pittsburg, Pa. Membership Committee—W. M. Darwood, Omaha, Neb.; P. J. Heffern, Pautucket, R. I.; J. E. Weirick, St. Paul, Minn. State Advisory Committee—Wm. Jarvie, Brooklyn, N. Y.; F. A. Shotwell, Rogersville, Tenn.; H. J. Allen, Washington, D. C. Committee for Promoting Relations with Foreign Examiners—Wm. Carr, New York, N. Y.; G. W. Pelzer, Great Falls, Mont.; H. W. Campbell, Suffolk, Va.; R. H. Jones, Winston, N. C. Committee on Contracts and Accommodations—J. Allen Osmun, Newark, N. J.

---

 EDITORIAL.
 

---

## THE FOURTH INTERNATIONAL DENTAL CONGRESS.

A MOVEMENT expressive of a desire to hold an international dental congress in 1904 in connection with the Louisiana Purchase Exposition has for some time been active, and finally took formal shape in a resolution by the National Dental Association at the recent Niagara Falls meeting requesting the *Fédération Dentaire Internationale* to designate August, 1904, as the time, and St. Louis, Mo., U. S. A., as the place for holding the Fourth International Dental Congress.

Three commissioners were appointed to convey to the officials of the Federation at the Stockholm meeting the resolution in question, together with a formal invitation from the dental profession of America, through their National Association, to unite in the holding of said Congress. We are pleased to be able to announce the acceptance of the invitation in the terms of the following cable message received August 18th:

The *Fédération Dentaire Internationale* accepts the invitation of the National Dental Association of the United States of America to hold the Fourth International Dental Congress in connection with the Louisiana Purchase Exposition in August, 1904.



Once more it is the privilege of the dental profession of America to act as hosts in an international gathering of dental practitioners, and the wisdom gained by our former experience in that capacity, as well as the development of our world's professional relationship in the intervening time, should serve as the basis for an effort which should surpass in all respects our previous attainments in this connection.

---

### RECENT LEGISLATION AND THE D.D.S. DEGREE.

Two important matters touching the status of the D.D.S. degree received consideration at the annual meetings recently held at Niagara Falls:

First, the action of the National Association of Dental Faculties concerning the recognition which should be given to graduates of foreign dental educational institutions who apply for advanced standing in American dental colleges as postgraduates in course for the D.D.S. degree; and,

Second, the recent legislation in New York vesting in the Board of Regents of that state power to confer the D.D.S. degree upon holders of their M.D.S. degree.

As to the first question, the Foreign Relations Committee of the N. A. D. F. at the meeting held last year at Milwaukee presented a report recommending practically that no graduate of any foreign dental educational institution be granted more than one year of advanced standing in any American dental college, and the report with its recommendations was apparently adopted, but a doubt arose as to whether the report was adopted strictly in accordance with the rules of the association, and as a protest based upon the supposed illegality of the method of its adoption had been recorded, the Foreign Relations Committee at the Niagara meeting brought in a new report in which the recommendations with respect to foreign equivalents were reaffirmed; this was accompanied by the explanation that because of the doubt already referred to affecting the legality of the affirmative action on the report made the previous year it had been deemed advisable not to enforce the recommendations as to foreign equivalents until after the Niagara meeting, but that thereafter the recommendations as to the advanced standing to be granted by American dental colleges to foreign graduates would be in full force and binding upon all colleges holding membership in the National Association of Dental Faculties.

It will be seen that the attempt to fix the standard of foreign

equivalents uniformly upon a basis of educational attainment equal to that required for admission to the second year in American dental colleges is purely an arbitrary standard, for the reason that it takes no cognizance of the variety of standards among European dental educational institutions. Moreover the published records of the Faculties Association fail to show that that body has ever had presented for its consideration and enlightenment any detailed exhibit of the conditions, regulations, and requirements affecting the education and licensing of dental practitioners in the several countries of Europe. It is evident that only in the light of such exact and authentic data could any equitable basis for the admission of foreign postgraduates to advanced standing in American dental colleges possibly be established. Therefore the recommendation of the Foreign Relations Committee with respect to "foreign equivalents," we repeat, is arbitrary,—and more than that, a contradiction of terms, for the proposed regulation, as a matter of fact, in no sense or degree takes the question of "equivalents" into consideration. If the word equivalents in this connection means anything at all it means a comparison between the educational attainments of the practitioners produced by the dental educational institutions of Europe with the products of American dental colleges, and we assume that no such comparison has been actually made by the Foreign Relations Committee, for the reason that their recommendation does not represent the facts which such a comparison would reveal. What the recommendation does practically mean, and in effect says, is this: Our present belief is that the product of even the best dental educational system of Europe represents an attainment equal only to that reached at the completion of the freshman year in an American dental college. If the Foreign Relations Committee does not intend to practically mean and in effect say that, then the word "equivalents" should not have been used in connection with their recommendation.

We have endeavored to deal strictly with the recorded facts without discussing or imputing motives.

The problem presents two serious aspects which call for thoughtful consideration upon the part of all who are interested in the welfare of dentistry, not only in its local but in its world relationships. The attitude of exclusiveness created by the recommendation which we are here considering would have at one stroke dealt a deathblow to all American participation in the advantages of international comity and reciprocity which the representatives of the dental profession in all nations are now endeavoring to promote through the medium of the "Fédération Dentaire Interna-

tionale"; it would incidentally have annihilated the international aspect of the Fourth International Dental Congress in connection with the Louisiana Export Exposition in 1904; but, worse than that, it would have made American dental education ridiculous in the eyes of the world by placing it upon an inflated basis through an arbitrary legislative enactment false in its premises, vicious in its tendency, and strictly comparable to that which creates watered securities or fiat money.

Happily these calamitous results were averted, and better counsels prevailed, eventuating in the passage of the following amendment, which renders nugatory the arbitrary and inflexible provisions of the recommendation, and places the recognition of foreign postgraduates by American dental colleges upon the actual basis of equivalent attainment. It substitutes reciprocity for retaliation:

*Resolved*, That concerning the reception of students who have pursued courses of instruction in foreign dental educational institutions, the Foreign Relations Committee shall be authorized to determine, upon the basis of equivalent instruction in each instance, the question of their reception and admission to advanced standing into schools of this association.

Of course, it goes without the saying that we are unalterably committed to the belief that "an honest D.D.S. is the noblest work of God," but as the world and its affairs are at present organized it is not an easy proposition by any means to convince the rest of humanity that there are not a number of other degrees representing the culmination of other and different educational systems which produce practitioners of dentistry fully competent to minister to the dental needs of a discriminating and even exacting *clientèle*. A recognition of the equivalency of these systems in so far as they embody the element of equivalency is the only equitable basis upon which reciprocity in dental education in its international bearings can be attained. The problem of international reciprocity is the same in its essential features as the problem of interstate reciprocity, and to erect an arbitrary barrier to the accomplishment of the former is as illogical and provincial as it would be in the latter case.

The recent action of the Legislature of New York in granting power by statute to the Regents of the University of the State of New York to confer the D.D.S. upon present holders of their now defunct M.D.S. degree has called forth much adverse comment and protest, as being antagonistic to the generally accepted belief that the granting of the D.D.S. degree *sine curriculo* is no longer justifiable. The principle involved in the New York case is somewhat peculiar, in that the proposed granting of the D.D.S. in this



instance is not, strictly speaking, the granting of the degree honorarily. The M.D.S. was conferred by the officers of the Dental Society of the State of New York upon the candidates who successfully passed their examination, and the records show that the said examination was reasonably thorough and stringent. Moreover, the candidates were not eligible for the examination until it could be shown that each had pursued a course of training and study for a number of years with a competent preceptor, so that even the antagonists of the proposed exchange of the M.D.S. for the D.D.S. generally admit that the M.D.S. is the exponent of a sufficient qualification for practice; in view of which the conferring of the D.D.S. upon holders of the M.D.S. cannot be properly called the conferring of an honorary degree, for it is in reality a conferring of the D.D.S. *ad eundem gradum*. The vital objection which, as we understand it, should induce the Regents of New York to at once abandon their intention is not because of the unworthiness of the candidates for this favor, but that by carrying into effect the provisions of the objectionable act the Regents will have established a precedent making it possible for any state legislature to grant power to its board of dental examiners to confer the D.D.S. on the basis of examination alone, and thus destroy the status and meaning of the degree which in the evolution of dentistry has come to signify the successful completion of a professional collegiate course and that alone. We believe the National Dental Association has acted most wisely and judiciously in requesting the Regents to abandon this matter, and we trust that for the benefit of the educational interests which it is their function to promote and foster they will recognize the impersonal and conservative spirit which prompted the protest of our national body.

---

### AN IMPORTANT LEGAL DECISION.

THE *Chicago Chronicle*, under date of August 10th, prints the following account of a decision by the court in an action involving the discretionary power of the State Board of Dental Examiners of Illinois to refuse license to graduates of a dental college of questionable reputability. The right of the board to the exercise of its discretionary power in such cases was affirmed:

The case was a petition for writ of mandamus brought by Etienne Stump, who is a graduate of the German-American Dental College, to compel the State Board of Dentistry to issue to him a license to practice dentistry based on his diploma from the college. The State Board on April 30th refused to license Stump on the ground that the German-Amer-

ican Dental College was not an institution of sufficient standing and repute to warrant it. The result was the prayer for mandamus, charging the board with evil motives.

In handing down his decision, Judge Chetlain said: "The questions involved are of grave importance, because they affect not alone the right of the petitioner, but also the rights of the German-American Dental College and other dental colleges. The questions which this Court is to determine are:

"Did the board investigate, hear, and determine the question as to whether the German-American Dental College was a reputable college?

"Did it act upon proper and sufficient evidence?

"Did the board fraudulently or without reasonable cause, arbitrarily or maliciously or with intent to injure the German-American Dental College refuse to issue a license to relator?"

The Court pointed out that the law providing for the board of dental examiners did not define a "reputable college," but left that to the discretion of the board. "But," continued the Court, "the discretion conferred must be fairly exercised in the interests of the public. Where it clearly appears that it has been abused or exercised arbitrarily or with manifest intent to injure, it may be controlled by mandamus."

Judge Chetlain then set forth what the evidence showed regarding the reputation and professional standing of the school concerned in the case. That the college was and is not apparently of sufficient standing to warrant the State Board in recognizing the holders of its diplomas was emphasized twice.

"It appears from the evidence," said the judge, "that Dr. Fritz W. Huxmann is and has always been the dean of the German-American College, and that with this college as early as 1891,—in fact, ever since its incorporation in 1888,—the State Board has had trouble. Dr. Charles Koch, who was a member of the board from 1886 to 1891, testified that at that time he and the members of the board were of the opinion that instruction sufficient in quantity and quality was not given to make the college reputable, and that the respondent's chief purpose seemed to be to graduate foreigners who did not expect to practice dentistry in this country, and that in 1890 or 1891 it was denied recognition."

The resolutions of 1900 and 1901, which recognized the German-American institution, accepting a consecutive course of study of eighteen months as equivalent to a full three years' course of study at the English-speaking schools, Judge Chetlain declared to be in direct violation of the general rules and regulations of the board then in force.

"The agreement of June 18, 1900," he said, "giving to this college the right to adopt a course one-half the duration required of all other dental colleges, conferred upon it a special privilege not granted to other colleges, and was in direct conflict with the general rules of the board on that subject. Likewise, the portion of the resolution of 1901, conferring a special privilege as to time of study, so far as it seeks to exempt the college from the operation of the general rule, is held to be a clear abuse of the regulations of the board and absolutely null and void, and the German-American Dental College, the illegal beneficiary of the special privilege thereby conferred, cannot receive any benefit therefrom."

OBITUARY.

---

## DR. ALBAN VAUGHAN ELLIOTT.

DIED, at his residence, Via Tornabuoni, Florence, Italy, June 19, 1902, ALBAN V. ELLIOTT, D.D.S., in his sixty-sixth year.

Dr. Elliott was born in Staten Island, N. Y., August 18, 1836. He began the study of dentistry with his brother, Dr. W. St. George Elliott, about 1880, and entered the dental department of the University of Michigan, from which institution he graduated March 23, 1881. He began the practice of his profession in London, England, in 1882. About a year later he removed to the Continent, establishing offices where he practiced his profession in Basle, Switzerland, and in Florence, Italy, which he continued until the date of his last illness.

Dr. Elliott, before his entrance upon the study of dentistry, was commissioned additional paymaster of the United States Volunteers, August 7, 1861, and accepted the appointment August 8, 1861. He was brevetted lieutenant colonel of United States Volunteers to rank from March 13, 1865, "for faithful and meritorious services during the war," and was honorably discharged from the military service, July 15, 1866. He was a member of the Military Order of the Loyal Legion of the United States, Commandery of the State of New York, and a member of the American Dental Society of Europe. Dr. Elliott was twice married, and is survived by a widow and one son.

---

## DR. AARON AMES.

DIED, at Lancaster, N. H., August 2, 1902, Dr. AARON AMES, of Kankakee, Ill., aged seventy-two years. The remains were taken to Kankakee for interment.

Dr. Ames was one of the pioneer dentists of Illinois. Born in Lanenberg, Vt., November 24, 1830, the early years of his life were spent upon a farm, where he remained until his majority, meantime acquiring such education as was afforded by the common schools of his native state. He began the study of dentistry at Mt. Holly, N. J. In 1852 he went west to locate lands in Illinois for certain friends, and was so impressed with the future of the country that he determined to remain, locating at Kankakee, where he continued in the active practice of his profession until a short time prior to his death, when the weight of years and failing health admonished him to relinquish it.

Of genial, sympathetic, and friendly disposition, broad-minded and liberal in his views, Dr. Ames was a fair type of the men that characterized the early settling of the west. While enjoying a large and lucrative practice he always found time for the performance of his duties as a citizen, and for many years in succession was a member of the board of education, a position that was congenial with his tastes and to which he devoted himself with active and unselfish interest.

Dr. Ames was married July 1, 1873, to Miss Mattie Perkins, of Kankakee, who survives him.



## MEMORIAL RESOLUTIONS—DR. ISAAC J. WETHERBEE.

## MEMORIAL.

THE surviving members of the Board of Trustees of the Boston Dental College have learned with regret of the death of Dr. Isaac J. Wetherbee, a member of this board since it was organized as a corporation in 1868, and its first president, which office he held almost continuously from the time of such organization until 1899, when in consequence of the changed conditions and methods of dental education, it seemed wise to suffer the college to become the Dental Department of Tufts College.

In recognition and remembrance of the unremitting constancy and devotion with which Dr. Wetherbee during this long period of time performed his official duties, this board has caused this minute to be made upon its records.

W. P. LEAVITT,

S. G. STEVENS,

B. S. LADD,

*Committee.*

---

## REVIEW OF CURRENT DENTAL LITERATURE.

---

[*International Dental Journal*, August, 1902.]

### PHYSICAL DIAGNOSIS AS RELATED TO DENTAL COLLEGE CURRICULA. BY DR. A. H. PECK, CHICAGO, ILL.

Dr. Peck points out the imperative necessity for the dentist to be acquainted with the various diseases of mankind, especially those affecting the vital organs or those organs most likely to suffer when shock is inflicted, and states that the only way to gain this knowledge is by a reasonable degree of familiarity with physical diagnosis. Physical diagnosis, the author says, is the term used to designate the methods employed during life in the detection of disease by the anatomical changes produced by it. The nature and extent of such changes can only be recognized and appreciated by the divergence which they cause in the affected organs from the known physical conditions of these organs when in health. The significance of physical signs cannot be determined by theory, but only by clinical observation confirmed by postmortem examination. If it be granted that it is at all desirable that the dentist shall possess this knowledge, it becomes at once evident that he must enter into a systematic and thorough study of the only methods by which these physical signs can be determined in the living subject. These methods are: Inspection, palpation, mensuration, percussion, auscultation, and radioscopy.

The author says that some of these methods have been in use for many centuries,—palpation, for instance, having been used in the neolithic or polished stone age, 1500 B.C., to demonstrate the presence of fluctuation, while radioscopy is practically new.

It is also necessary that the dentist should know the areas into which the body is divided, and their definite anatomical relations. It is also important to know that the first area from a physiological standpoint is the supra-clavicular region; and that this area is definitely bounded below by the inner three-fifths of the clavicle, internally by the trachea, and superiorly by a line extending from the junction of the outer with the middle third of the clavicle to the top of the trachea. Also it is necessary to know that normally

within this area are to be found the apex of the lung, the carotid artery, the subclavian artery, and the subclavian and jugular veins. Next below this is the clavicular region, which is that part of the thoracic cavity lying back of the inner three-fifths of the clavicle. While this, the author holds, is an important region to be familiar with, he considers the most important from the standpoint of the dental practitioner to be the infra-clavicular, the boundaries of which must be carefully studied in order that one may recognize the vital anatomical structures in their normal position. In this region are to be found, on the right side, the lung tissue, the ascending vena cava, the right bronchial tube,—lying back of the sterno-costal articulation,—and also a small portion of the aorta. On the left side are the pulmonary artery from its origin to its bifurcation, and the left bronchial tube, lying a little below the second sterno-costal articulation.

Dr. Peck is to be highly commended for emphasizing the necessity for the dental student to be familiar with physical diagnosis. While this branch of medical science has not been enforced in all the dental schools, yet in some of them the students receive the training which the writer desires to see made a part of the curriculum of all dental institutions. There are certain operations in the practice of dentistry that could be performed to a greater advantage to the patient if operators were familiar with the condition of the vital organs; and in many such cases, especially when organic lesions of vital organs were present, the dentist would not permit a patient to remain in the chair for a greater length of time than the general health would warrant. There are records of severe cases of nervous prostration caused by prolonged sittings at the dental chair,—accidents which could not have taken place if the dentist, from a competent knowledge of physical diagnosis, had foreseen the likelihood of the occurrence of these disastrous effects on account of some systemic aberration.

[*University of Pennsylvania Medical Bulletin*, July, 1902.]

#### PRELIMINARY ANESTHESIA BY NITROUS OXID; REPORT OF 150 CASES COMPARED WITH 150 CASES OF PLAIN ETHERIZATION. BY C. C. NORRIS, PHILADELPHIA, PA.

The writer states that the first requirement of an anesthetic should be its safety; that nitrous oxid, in small quantities and properly administered, appears to be perfectly safe, and that few physicians would hesitate to recommend its use to a nervous woman requiring to have a tooth extracted.

Carter, Prevost, and Kelly have used nitrous oxid in a considerable number of cases and have reported satisfactory results. It has also been used in Guy's Hospital, London, for the last twelve years.

Referring to the advantages of nitrous oxid as compared with ether, Dr. Norris says that in the case of nitrous oxid anesthesia there is a complete absence of the disagreeable symptoms often accompanying the early stages of etherization; that it does not taste or smell, and that a few deep breaths will produce unconsciousness. This, the writer well remarks, is of special advantage, inasmuch as nervous or hysterical women dread taking ether more than they fear the actual operation. No matter how well ether is given, there will always be a certain percentage of patients who will strain and gag, and may even vomit, this being the case with patients suffering from chronic cough. Another advantage of the preliminary use of nitrous oxid is that very much less ether is used, and consequently less nausea and vomiting follow the operation. Contra-indications to the use of nitrous oxid as a preliminary anesthetic are given as follows:

First: Arterio-sclerosis, on account of increase of the blood-pressure.

Second: Very youthful or very advanced age in a patient. The very young will not breathe as directed, and moreover they usually take ether or

chloroform very well, especially the latter. The aged find it very difficult to breathe deeply, and they also take ether very well. In addition to this, most patients over seventy years have at least a tendency to arterio-sclerosis.

Third: Any of the contra-indications to the use of ether.

The author then mentions the precautions that should be observed prior to the administration of the anesthetic. He recommends that no food should be given for twelve hours prior to such administration, but that in case of the patient's feeling weak from want of food or being in a state of nervousness, a glass of sherry or from one-half ounce to an ounce of whiskey or brandy should be administered five or ten minutes before the anesthetic, and that the anesthetist should ascertain that the patient has no artificial teeth. He then calls attention to a point that is often not strongly enough insisted upon; this consists in maintaining absolute quiet in the room during the preliminary stage of anesthesia.

Dr. Norris's report is based upon one hundred and fifty cases of combined nitrous oxid and ether anesthesia. He states that with the combined use of these two anesthetics the surgeon has more time to operate, and that less ether is required to produce complete anesthesia, also that the pulse-rate is much lower and more regular than in cases in which ether is given from the beginning. He then refers to certain precautions that are too well known to the average dentist to be referred to in this review, recommending certain means to prevent the minor sequelæ, such as conjunctivitis, ether burns, and severe vomiting, that may follow etherization, and concludes his communication by stating that care should be used to prevent the chilling of the patient during the anesthesia, as recent experiments have shown that this is one of the most frequent causes of post-operative pneumonia.

[*Journal of the British Dental Association*, London, July, 1902.]

CASUALTY DURING EXTRACTION. BY MR. T. S. CARTER, LEEDS, ENGLAND.

Mr. Carter reports the case of a patient in whom several lower and upper teeth, including the upper right third molar, had to be extracted. The patient was anesthetized, and all the lower teeth necessary and also the upper ones were extracted, but upon attempting to remove the upper right third molar the operator, who was holding his left thumb on the outer side of the process and the index finger on the inner, noticed that not only the tooth, but also part of the alveolar process, was coming away. He applied all the digital pressure possible to retain the tuberosity *in situ* while dislodging the tooth, but without any avail, and therefore, following the advice of the anesthetist, removed the loose portion, which consisted of the tuberosity including the floor of the antrum and which held the roots of what the operator believed to be an abnormal third molar. The alveolar plates being very thin, and the roots of the tooth so strongly attached to it, less force was required to break through the tuberosity than to dislodge the tooth. The removal of the loose portion was not followed by much hemorrhage or by uncomfortable symptoms of any kind, and upon examination of the patient two months later it was found that the region was perfectly normal and healthy, the opening to the antrum having become closed, nothing except a local flatness indicating that anything unusual had occurred.

The author at the beginning of his communication states that the practice prevailing among surgeons is to leave the fragment in position in cases of fracture of the superior maxilla, no matter how loose they are, as, owing to the greater vascularity of these bones, union is hastened and necrosis rarely follows. Therefore his report is of unusual interest, as it plainly shows that there are cases in which the removal of the fragment is not followed by any ill results, but that, on the contrary, the tissues heal rapidly.



[*Revue de Stomatologie*, Paris, July, 1902.]

## USE OF CALCIUM CHLORID TO PREVENT HEMORRHAGE AFTER TOOTH-EXTRACTION.

As is well known, the extraction of a tooth may give rise to severe hemorrhage in persons suffering from hemophilia. Dr. C. E. Vallis, assistant dental surgeon in King's College Hospital, London, has observed the case of a woman aged twenty-five, presenting the hemorrhagic diathesis, in whom the extraction of a tooth was followed by a hemorrhage which lasted thirty-six hours. As the teeth of this patient were in very bad condition, and as the extraction of all the carious teeth became necessary because of dyspeptic troubles from which the patient was suffering, Dr. Vallis endeavored to use some means by which the coagulability of the blood would be increased. With that object in view he administered calcium chlorid in weak doses during a period of eight days previous to the time set for the performance of the operation. He extracted an incisor, an operation that was performed without the slightest loss of blood. Continuing to administer the same agent, he was able to extract every tooth without hemorrhage. Since then, Dr. Vallis has observed a similar case in which calcium chlorid has given the same satisfactory results. The disagreeable taste of this medicament, and the slight tendency to constipation which it induces, are the only inconveniences connected with its administration, even after continuous use during a period of three to four weeks.

[*l'Odontologie*, Paris, June, 1902.]

## CHEMICAL LIGHT IN DENTISTRY. BY DR. FOVEAU DE COURMELLES.

Dr. Foveau de Courmelles suggested to the Société d'Odontologie, in 1900, the possibility of utilizing chemical light in dentistry, and with this object in view gave subsequently before that body a demonstration of a chemical radiator of his own invention, which presents features that make it possible to apply the chemical rays in dentistry. His radiator possesses some advantages over those that have been previously used, inasmuch as only the violet and ultra-violet rays are permitted to come in contact with the diseased region, and the perception of the rays is neither painful nor thermic, but on the contrary, a cold sensation is experienced upon the area of application. He has changed Finsen's technique and has thus made it possible to perform painlessly certain operations in the field of dentistry by means of artificial light. With his modifications, the rays of light can reach the interior of cavities,—a condition which it was not possible to bring about before, inasmuch as Finsen's technique involves the necessity of introducing into the mouth, or against the palate or maxillary sinus, a compressing apparatus, which had to be supported for an hour and a half, the length of time necessary for the application of the rays with his apparatus.

The author calls attention to the fact that the microbicidal action of the chemical rays on tubercular lesions has been conclusively proved by Finsen and by his students Bie, Bang, Ehleres and others. These results can be brought about by acting upon the diseased part from a distance, and Dr. A. V. Menine, of St. Petersburg, has been able to bring about a sufficient degree of anesthesia for the extraction of a tooth with a fifty-candle power incandescent lamp placed at sixty or seventy centimeters from the patient, and with a blue glass placed in the luminous field. He also quotes Dr. Kayser's results, who, according to his communication before the Imperial and Royal Society of Medicine of Vienna, has treated pulmonary tuberculosis by means of incandescent lamps of blue light of thirty-two candle-power.

He then describes the case of a patient, affected with tuberculosis, who was taking his treatment, and who accidentally hurt the side of her face with an

instrument that was being held by one of his assistants in the course of treatment. The blow was a hard one, but the patient did not experience any pain, because at that sitting the rays of light were being projected against the upper lip to treat some local disorder, the light reflecting upon the injured area. The author also states that several cases of maxillary sinusitis have been incidentally cured by the additional action of rays of light used in treating a lupous condition of the buccal cavity. He has records of five cases of loose teeth which have become consolidated in the course of treatment for other purposes. The investigator is not in a position to state whether the cure of pyorrhea alveolaris can be brought about by the therapeutic means here discussed, but nevertheless states that it is absolutely incontestable that the teeth to which he has referred became consolidated. Tuberculosis of the maxillary bones can also be treated by the aid of chemical light, as has been demonstrated by a case of tuberculosis of the humerus in which this method was used. He has also treated muco-buccal tuberculosis with the chemical rays. He regards the field for application of chemical light in dentistry as a wide one, while he says that, as in all other therapeutic applications of chemical light, both operator and patient should have much patience,—for, although rapid results are sometimes obtained, more often the desired effects are slowly produced. Anesthesia, however, is always brought about in a few minutes, and the phlyctenar reaction and burns—which before made it impossible to apply the method to dentistry—have been eliminated by his technique.

With regard to the way in which the rays of light bring about these favorable results, the author believes that intense electrolytic and chemical actions occur. After referring incidentally to the treatment of tubercular sequelæ of measles, the author concludes his communication with the statement that his modifications of Finsen's apparatus have made it possible to apply chemical light in surgery, medicine, and dentistry.

[*Journal of the British Dental Association*, July, 1902.]

THE REMOVAL OF SUSPICIOUS GROWTHS OR ULCERS IN THE MOUTH FOR MICROSCOPICAL EXAMINATION. BY T. LOW WEBB, M.B., CH.B., SHREWSBURY, ENGLAND.

After referring to the fact that malignant growths of the mouth are diagnosed in some cases long before any physician suspects them, the essayist states that when there is any doubt as to the malignancy of the growth, the question is settled by snipping off a piece of the mucous membrane for microscopic examination. He earnestly advises that a deep enough specimen be removed,—for, as he remarks, it is exceedingly vexatious to find a tolerably large piece hardly deeper than the mucous membrane. Especially in epithelioma, the common malignant neoplasm of the mouth, the fragment should not be too thin; it must embrace the submucous tissue to ascertain whether the epithelioma is growing deeply. Deeming this really an important matter, if apparently a small one, he advised his *confrères* to make deep sections, but this proving to be a difficult task, he has suggested a little apparatus to facilitate the work; this is composed of pieces of glass tube of little more than three-eighths of an inch in diameter, slightly curved at the ends. These tubes are to be attached to an ordinary aspirator. On placing the tube on the tissue one wishes to remove, and pressing it lightly, a vacuum is created and a papilla of mucous membrane is drawn up into the tube, so that with a pair of scissors it becomes tolerably easy to cut off a bit of the mucous membrane. This apparatus presents the advantages that it permits one to make a deeper cut, that it does not tear into rags the bit of tissue, and that it eliminates the possible danger of the patient's swallowing the piece intended for microscopical study.

[*Dental Era*, St. Louis, August, 1902.]

## THE ETIOLOGY OF DENTAL DISEASE. BY DR. J. D. PATTERSON.

The author states that while the general principles in the study of dental disease are the same as in the study of other parts of the body, so far as pathological changes are concerned, yet there is in the local surroundings of the buccal cavity very much of local influence, both in the causes and the course of disease, that renders the study of the causes of dental disease different from that in other parts of the organism. There are two points of differentiation to which he calls especial attention. First: The greater exposure to outside influences, as variations in temperature, contaminated air, or foreign matter. Second: The fact that the mouth affords a breeding-place for bacteria not found in other regions. Lastly, there is the strange omission of hygiene in the region where it should always be in evidence. He quotes Dr. Hunter's investigations (see *Practitioner*, London, December, 1900) regarding the relationship of oral sepsis to general disorders, and mentions the fact that a large majority of the most destructive dental diseases, in their inception, result from the unsanitary condition of the oral cavity. The remaining portion of the paper leads to the belief that the essayist inclines to underrate the average amount of care given by patients to the teeth. He states that only about two per cent. care for the teeth in the manner demanded as the result of modern knowledge, and that scarcely one mouth in ten is devoid of the nauseating odors of putrefying matter. Both these statements, in the reviewer's opinion, are rather exaggerated. In the first place, from an experience gathered in one of the largest clinics in the country, the reviewer, while not in a position to assert in an absolute way the average percentage of clean mouths, can yet unhesitatingly state that this proportion is certainly greater than two per cent.; and when it is considered that the latter conclusion has been arrived at from college clinical material, it is only reasonable to presume that in private practice, the source from which Dr. Patterson has derived his statistical material, the proportion must be considerably larger. As to his second statement we refrain from comment, as not being familiar with the conditions of the territory from which the author has collected his statistical material; but will, however, remark that we have reason to believe that the number of unclean mouths does not reach such an alarming proportion in all parts of the country.

As the author himself states, his paper is a plea that the dentist shall do conscientious work in removing the factors bringing about dental diseases, and shall do his whole duty in eradicating and in preventing the causation of dental disorders.

The author further states that in disease very much depends upon the character of the tissue as well as upon the environments, and expresses the opinion that the possibility of infection and the rapidity of pathological and destructive changes is nowhere more dependent than in dental organs upon the character of the tissue itself. It has been stated, the author says, that tissues are all alike in different animal organisms of the same species, and that therapeutists should treat all alike. He questions the accuracy of this hypothesis, regarding it as alike unjustifiable and unscientific, as it leads to the view that every cell is identical in vitality unless affected with specific virus. We agree in every respect with the author in refuting this conclusion, as our present knowledge of general pathology is based upon the scientific truth that the conditions of resistance and vitality are different in cells of the same organ. After stating that in the study of the etiology of all disease, notably dental disease, the character of the tissue will soon be an acknowledged factor for or against the inroads of injury and infection, the author says that the



dentist must be especially on the alert with methods of prevention when the conditions of vitality of the tissue, both in tooth-substance and mucous membrane, are not such as to resist the encroachment of disease, and that while the dentist's vocation can hardly begin at as early a period as he could desire, viz, in fetal life, yet when opportunity offers, the dentist should preach the doctrine of nutrition, good food, a good supply of oxygen, living and sleeping in a good atmosphere, so that the child may be the possessor of the best dental tissue that its cells are capable of forming.

[*Archives de Stomatologie*, Paris, July, 1902.]

PLASTIC FILLINGS OF METALLIC SALTS. BY ERNEST SCHMITT,  
PROF. CHEM., FACULTY OF SCIENCE, LILLE, FRANCE.

The author has experimented with magnesium oxychlorid, which he prepares as follows: 75 grains of recently calcined magnesia are triturated with  $2\frac{1}{2}$  fluidrams of a magnesium chlorid solution containing 30 per cent. of the anhydrous salt of a density of 1.285, or 32° Beaumé. After triturating these ingredients for two hours and a half, a very hard resisting cement, with a porcelain appearance, is obtained. A piece of this cement that had been prepared four years previously was suspended in distilled water during August, 1900; it lost one-third of its weight but preserved its form and resistance. The author has prepared zinc oxychlorid in the same way, that is, by triturating 80 grains of calcined zinc oxid and  $2\frac{1}{2}$  fluidrams of zinc chlorid of a density of 1.634, or 56° Beaumé, but the resulting cement is granular and sets very rapidly. He has also prepared calcium oxychlorid by the method already described. This mixture sets in about half an hour, but does not produce a homogeneous mass. Professor Schmitt then conceived the idea of preparing a mixture of calcium and magnesium oxychlorid. The mixture is carried on in a mortar, and produces a very friable, ball-shaped mass, which hardens in half an hour.

[*Therapeutic Gazette*, July 15, 1902.]

THE EMPLOYMENT OF ETHYL CHLORID AS AN ANESTHETIC.  
(EDITORIAL ARTICLE.)

The writer states that while it is true that ether and chloroform are the anesthetics by far the most frequently employed for surgical operations, it is also a fact that the profession is still seeking for additional anesthetics which by reason of their speedy and agreeable influence can be employed as substitutes for these older drugs. In some instances it is the wish of the operator to administer an anesthetic which will produce its effects very rapidly, and will then permit the patient to speedily return to consciousness, and it is rather a notable fact that all of the substitutes brought forward to take the place of ether and chloroform, which have obtained any popularity, belong to a class the effect of which is very fleeting. Aside from nitrous oxid, which is of course employed to an enormous extent by dentists and to an increasing extent by surgeons, but which nevertheless possesses the disadvantage that its administration requires cumbersome apparatus, there is only one other anesthetic which has lent itself readily to surgery for minor operations, namely, ethyl bromid; and this remedy, because of several deaths occurring under its influence early in its career, has not gained the popularity which it may deserve, although Montgomery and a number of other skillful operators employ it constantly. Doubtless some of the evil effects which have followed its use have been the result of the employment of an impure product, or that which by exposure to light and air has undergone degenerative changes, while in still other instances ethylene bromid has been ignorantly substituted for ethyl bromid, with disastrous effects.

The writer remarks that it should be remembered that when ethyl chlorid is given by inhalation as an anesthetic it must be administered upon a mask which will prevent its rapid evaporation in the surrounding atmosphere and will cause practically all its vapor to enter the lungs, and that some of the closed masks which are usually used by English anesthetists in the administration of ether and chloroform can be employed for its use provided that their valves can be stopped, so that too rapid evaporation may not take place. Another method of administering it when no inhaler is at hand is to use a tin or glass funnel the narrow part of which is filled with cotton lightly packed, the large part of the funnel being placed over the nose. The ethyl chlorid is then sprayed upon the cotton through the small end of the funnel, and the patient receives its concentrated vapor.

The article quotes F. H. Rose, who states that in his belief ethyl chlorid is a very safe anesthetic, since it practically does not affect the pulse or respiration, and that while, in 2500 cases quoted by Lopheisser, of Innsbrück, one death is recorded, which is a higher percentage than that which is usually credited to chloroform, yet it may be well said that this particular patient was an extremely unfavorable subject, and it is perfectly possible that a larger number of statistics would reveal the fact that this percentage of mortality is far too high. Other things in its favor are—Its pleasant odor; the ready induction of an anesthesia which lasts from one to two minutes; the speedy and easy recovery from the condition of unconsciousness; the absence of after-effects; and the fact that the anesthesia produced by it is a little longer than that ordinarily caused by nitrous oxid. Muscular relaxation is rarely complete, this being a disadvantage in a certain number of cases.

After mentioning a few more points to the advantage of this drug, the writer concludes his paper by stating that the claims that had been made for ethyl chlorid as an anesthetic by inhalation for a certain class of cases had been sufficiently strong to justify its employment, but it is to be pointed out that in a discussion which followed the reading of Dr. Rose's paper, Dr. Symes seemed to believe that ethyl chlorid was really not as useful as nitrous oxid, and that Dr. Harris thought it even failed to produce anesthesia, the patient being noisy during its administration.

[*Dental Summary*, Toledo, Ohio, August, 1902.]

#### TIN FOIL, ITS MANIPULATION AND ITS VALUE AS A TOOTH-SAVING MATERIAL. BY E. BALLARD LODGE, CLEVELAND, OHIO.

The author calls attention to the fact that for more than one hundred years tin has been used by the better class of dentists on account of its tooth-saving properties, and that tin foil as a filling material is so well adapted for the purpose that it should be classed among the royal metals. He says that "if there were but one metal with which to save teeth, more teeth could be saved with tin than with any other metal." Referring to the physical properties of this metal, which make it especially valuable for dental purposes, it is stated that it has a very low conducting power, and that on this account its use in close proximity to the dental pulp is not followed by any degree of irritation to that organ. Well prepared, chemically pure tin possesses considerable cohesiveness, and this property will be lasting provided it is kept from contaminating influences, as air and moisture, which tend to oxidize it slowly upon the surface. Dr. Lodge states that the cohesive property of tin has been doubted by some, but that it is now generally conceded.

The writer further says that when combination fillings of tin and gold are made it is believed that a molecular change takes place, rendering the material harder and more lasting than it otherwise would be, and that the therapeutic value of this filling material is largely due to oxids and sulfids

of tin. Both salts are insoluble in the fluids of the mouth, and both are antiseptic. The cavities the author recommends as those to be filled with tin are the first permanent molars of young persons, approximal cavities in bicuspid and molars, especially such as extend beyond the gum margin, with such other cavities as are obscured from view, such as lingual cavities in incisors.

The author then calls attention to the method of inserting combination fillings of tin and gold, and closes his communication with the statement that in his belief tin foil is one of the most important factors in the problem of saving teeth, and that the large use now made of tin in the technic work of dental schools, and the approval of tin by many of the best dental educators, will have an influence in the way of promoting the enlarged use of the metal in the saving of teeth.

[*Revue Odontologique*, Paris, July, 1902.]

## TREATMENT OF PUTRESCENT ROOTS WITH SULFURIC ACID.

By DR. SIFFRE, PARIS, FRANCE.

Dr. Siffre reports that he treats all infected roots with sulfuric acid, and that since 1897, when he began to follow this practice, his results have always been satisfactory. He recommends saturating the canal with alcohol at 90° to modify the caustic action of the sulfuric acid, and says that the cleansing should be carried to the point where no odor of the acid can be perceived. He showed four patients in whom teeth thus treated were followed by good results.

It is regrettable that the author should not have mentioned the originator of this method in connection with his report. This omission would be excusable if this method were a recent one, but it is otherwise when it is considered that the method was suggested by Dr. J. R. Callahan about nine years ago, and that since then its use has become general, and frequent reference has been made to it. The reviewer has noticed of late a tendency to omit bibliographical reference in dental writings,—a practice which is objectionable, not only because credit is not given where it properly belongs, but also because of its tendency to lead to the making of erroneous records of dental discoveries, inventions, and methods.

---

## PERISCOPE.

---

**A "Candle Power."**—A candle power is considered to be the light produced by a standard candle, six to the pound, burning 120 grams spermaceti wax per hour; candle  $8\frac{1}{4}$  inches long, 0.85 inch diameter.—*Exchange*.

**Babbitt Metal.**—All real "Babbitt metal" contains copper. To add more, put it in the form of filings in the bottom of the crucible, put the Babbitt on top, cover with common soda; melt and stir.—*Power and Transmission*.

**Devitalizing Teeth.**—The secret of avoiding pain is to avoid pressure. This is best accomplished by applying the arsenic moistened with carbolic acid direct to the exposure, then applying a pellet of cotton and sealing the cavity with thin cement.—F. H. METCALF, *Pacific Dental Gazette*.

**Subarachnoid Injection of Cocain.**—The discovery that anesthesia may be produced by subarachnoid injection of cocain should be credited to Dr. Leon Corning, of New York, but its application for the purpose of performing extensive operations should be credited to Dr. A. Bier, of Kiel.—*Dental Brief*.



**Tincture of Iodin.**—Tincture of iodine mixed with glycerin is said to prove more effective as a local application than the plain tincture. This is due to the retardation of the volatilization of the iodine, or more likely to the skin remaining soft, and hence in a better condition for absorbing the drug.—*Archives of Dentistry*.

**Ambidextrousness.**—The more I practice it, the more fully I am brought to a realization of its many advantages. I have preached it for years, but shall never give up until I see it taught in the schools. Its advantages are too many to enumerate here, and there are no corresponding disadvantages.—F. H. METCALF, *Pacific Dental Gazette*.

**Cement in the Construction of Seamless Crowns.**—In the construction of seamless crowns, the use of cement is preferable to plaster for the model, as it is stronger and can be polished after it is carved. A fine vent-hole put through the model assures a perfect cast of it when it is dipped into the hot metal.—CHARLES H. WARBOYS, *Dental Register*.

**Rubber Dam in All Operations.**—In all our operations on the teeth, absolute cleanliness and aseptic methods should be employed. I have no sympathy for the operator nor confidence in the method which does not require the use of the rubber dam for treatment. Whatever the treatment is, it must be thorough in every detail, in cleaning, drying, and filling.—A. C. SEARL, *Pacific Dental Gazette*.

**Drainage for Cavities Containing Thick Pus.**—Cavities containing thick pus should not, as a rule, be drained with gauze, for the reason that the pus is too thick to be amenable to the laws of capillarity, and because the gauze may also have a tendency to block and practically cork up the wound. Tubes, rolls of protective tissue, silkworm-gut, and horsehair are to be preferred.—*Internat. Journ. of Surgery*.

**To Mend a Rubber Plate.**—Put a thin film of wax over the broken surface of one piece, hold the parts above the flame of a small spirit-lamp, and when the wax is melted press the parts together and cool for a moment. This forms a cement that holds the broken plate in perfect position. The lingual surface may be strengthened with melted wax, and a cast obtained in the usual way.—*Archives of Dentistry*.

**To Reharden Steel Instruments.**—To reharden tools that have been burned they should first be cleaned. Then take common machine oil and forge cinders; make a bed of the cinders, heat the tools, put them in the cinder bed, and pour the oil on them till they are partly cooled off. Having put plenty of oil on the tools, cover them with the cinders and ashes, burying them deeply. They should be left so for twelve or fifteen hours.—*Power and Transmission*.

**Individuality in Dental Operations.**—Every man holds up to himself an ideal toward which he works. That ideal may be relatively high or low, depending on the individual moral standard, ambition, and desires, yet it exists, whether he recognizes it or not. Hence to have any sort of definition as to what constitutes the "ideal dentist" is out of the question, as there would be about as many definitions as there are individuals.—HARRY L. GRANT, *International Dental Journal*.

**Necessity of Medical Knowledge for Dentists.**—To judiciously outline our work we as dentists must have as thorough a knowledge as possible of the various diseases; also the physiological changes that may occur are necessary to be understood. Who of us would keep a patient afflicted with organic heart disease in our chair for an unusually long and fatiguing

operation if we were able to inform ourselves of the true condition of the parts?—A. H. PECK, *International Dental Journal*.

**Range of Vision.**—How far a man can see with unaided vision depends upon several conditions,—the clearness of vision in the individual, the density of the atmosphere, the size of the object, and the illumination. Under proper conditions, an object 1 foot above a level stretch can be distinguished  $1\frac{1}{3}$  miles; one 10 feet high,  $4\frac{1}{2}$  miles; 100 feet high, 13 miles; mountains 5000 feet high can be seen 95 to 100 miles. Five miles may be taken as the limit at which a man can be seen by an observer on the same level.—*Power and Transmission*.

**Soapstone.**—Pulverized soapstone has several uses in the dental office. Have a quantity of the powder in a wide-mouthed bottle on the operating case. A little rubbed on the dam where the holes are punched will make the application easy. The powder applied to the surface of cement fillings prevents its sticking to the instruments. In the laboratory, a pepper-box of the powder from which to sprinkle it on plaster after setting it in the lower part of the flask sufficiently to handle, makes a good separating medium.—JOHN G. HARPER, *Register*.

**Precautions to be Used in the Manipulation of Cohesive Gold.**—I would like to say to those who are using cohesive gold that they should look out for the scissors they cut it with; they should watch out for the rubber dam, for the silk, the lamp, the mica and the electric annealer, and see that everything of that kind is in proper condition; then they will be much more likely to have perfect fillings, barring the condensation of gases on the surface, than they do now when they are not particular in those respects.—A. W. HARLAN, *Dental Review*.

**Books Alone but a Minor Factor in the Development of Manual Skill.**—Books alone will never train fingers and develop mechanical skill. It is the doing of the thing, with thoughtful intelligence back of it, that brings about manual dexterity. Inclination and some intuitive mechanical ability are essential, and the individual possessing a mind with those attributes will become a more successful member of society if the education previous to taking up the profession has been broad and not necessarily purely practical. HARRY L. GRANT, *International Dental Journal*.

**Deflection of the Nasal Septum.**—Dr. Nelson M. Black, of Milwaukee, in a paper entitled "One of the Etiological Factors in the Production of Deflected and Deformed Nasal Septums, and the Methods for Its Relief" (*American Medicine*, February 15, 1902), calls attention particularly to some cases due primarily to a high-arched palate, the result of the deformity of the upper jaw, and the satisfactory results obtained by having the lateral diameter of the jaw widened so as to relieve the strain of the septum before performing any intranasal operation for its correction.—*Amer. Journ. of the Med. Sciences*.

**To Facilitate Placing of Rubber Dam on Badly Decayed Teeth.**—Prepare the cavity with retaining grooves to the cervical margin, fill the cavity with cotton well packed to place, leaving space for the restoration of approximal contours with a quick-setting amalgam, solidly packed over the cotton dressing. After the amalgam has hardened sufficiently, cut through to and remove the cotton. This will give free and direct access to the pulp-chamber and permit easy medication, and will restore the tooth so that the rubber dam may be easily applied. This sort of treatment is also useful to prepare a tooth for an application of nerve paste or cocain by the pressure method.—O. E. INGLIS, *Stomatologist*.

**Condensation of Gold.**—The proper condensation of a gold filling requires considerable thought and care. Its specific gravity is 19.3, but it may be slightly condensed beyond this by heavy pressure. In inserting gold in a cavity piece by piece, the mass should be given a specific gravity of 16 to 17 as a rule. If less than 15 it will be porous, and allow the seeping in of moisture and become foul. If less than 16 in specific gravity it may become battered or driven from its position by the mastication of hard foods, or the catching of solid particles between the teeth while chewing.—D. M. CATTELL, *Dental Review*.

**Crowns for the Anterior Teeth.**—I have never seen anything that would compare favorably with the Logan in looks, and its durability is wonderful when perfect contact with the root is obtained. For both strength and durability the Richmond crown still leads, and with the careful operator I believe it to be preferable in most cases. I have never seen a satisfactory crown with a platinum band and the addition of porcelain. Recession of the gum is bound to occur, and the platinum gives a blue line at the gum margin. I have seen this in many cases that have come under my observation.—F. H. METCALF, *Pacific Dental Gazette*.

**Suction Chambers.**—I have not used a suction chamber at all this winter, and in a case which seemed most unpromising I surprised myself by obtaining the best result. The mouth had been utterly ruined (as I thought) by a rubber plate with a deep suction chamber. The roof was flat and flabby with a horrible excrescence due to a deep chamber with sharp edges, and all of the ridge in the incisal region on one-half of the maxilla had been lost by absorption. I used a broad relief equal in thickness to No. 60 tin foil and obtained a gold plate which rested immovably during all the excursions of the lower jaw, notwithstanding the need of unusual prominence in the incisal region. We live and learn; at least we may, if willing to heed advice.—R. OTTOLENGUI, *Dental Review*.

**Dangers of Extreme Aseptic Methods.**—Far be it from me to cry down reasonable asepsis or antiseptis, but I do sincerely wish to raise my voice against this extreme and even dangerous method of modern asepsis. To give the details of the toilet of a modern surgeon and a description of his boudoir in one of our modern hospitals would be beyond the scope of this address, but there are certain features of his preparation so striking as not to escape the notice of the most casual observer, like washing and briskly brushing with a stiff brush his hands and arms in strong soapsuds, chlorinated lime, sal soda, and then rinsing with alcohol, mercury bichlorid, etc. What does all this do but rub off his protective epithelium and lay him liable to infection?—JUSTIN DE LISLE, *International Dental Journal*.

**Non-Cohesive Gold in Cylinders.**—I would again make a plea for the use of non-cohesive gold in the form of cylinders, the length of same being equal to the depth of the cavity. I use No. 10 gold and fold it four times, making No. 40. Occasionally it is folded again, making No. 80. The gold does not crumple up or take so much force to condense as a pellet giving the same thickness would. By keeping the surface of the filling as flat as possible, and by folding the gold on, you can condense it without heavy malleting and do the work very rapidly. This method saves time, protects the peridental membrane, guards against the danger of chipping the surface of the cavity at the cervical margin, and lessens the danger from leakage. The fillings are finished with cohesive gold.—J. N. CROUSE, *Dental Review*.

**Skill Necessary for the Construction of Artificial Dental Substitutes.**—The construction of artificial teeth requires more skill than the mere mechanic possesses. Such operations to be performed successfully and safely



must be preceded by a thorough knowledge of the parts and of the material employed, and this knowledge can only be acquired by a professional education. An acquaintance with the principles and practice of medicine is necessary to prepare the mouth, and to determine when it is in proper condition to receive artificial work. In the adaptation of artificial teeth we have to deal with living structures, and ignorance on the part of the specialist of the region of the body to which his treatment is confined is to the highest degree culpable and should under no circumstances be tolerated.—E. I. BACKUS, *Dental Register*.

**Roots Destroyed by Crowning.**—I do not hesitate to say that there are as many, if not more, roots destroyed by crowning than are saved by it, because of the production of irritation, which induces gingivitis leading to pericementitis and other ills that follow irritation. The ferrule should be used with extreme care. I very rarely, except in exceptional cases, let it run above the gum at all. I prefer a plate of gold or platinum well fitted to the face of the root. Through this is passed the post of a Logan crown, which has its labial edge nicely adapted to the labial part of the plate, while the lingual edge of the porcelain is well ground away, leaving a space between the crown and the plate. After being satisfied that everything is as correct as one can make it, simply catch it on the inside and outside with a quantity of zinc phosphate.—H. C. REGISTER, *International Dental Journal*.

**Evils Resulting from the Presence of Dead Teeth in the Mouth.**—Physicians frequently overlook very serious conditions because of lack of knowledge of the results of the presence of dead teeth. Several months ago my attention was called to the case of a young man who had undergone a successful operation for empyema of the frontal sinuses, but the operation had left the boy blind in one eye. On examining the case, I found that the upper first molar on the affected side had been treated and filled, but there was a suspicious appearance about the tooth. I had an X-ray picture made of the side of the face, which revealed the presence of an opaque condition in the antrum. The tooth was extracted and an opening made into the antrum, which was found filled with a serous and bloody fluid. This was washed out with antiseptic washes and the antral condition treated. In three weeks' time the eyesight had been restored and the antral difficulty was well under way toward cure. I find few remedies so effective for the preliminary treatment of antral troubles as aromatic sulfuric acid.—T. G. RIX, *Dental Register*.

**Perfect Occlusion.**—To obtain a perfect occlusion, there are three things to be considered:

First: A material with which to make the articulating base-plate, a material that shall be plastic to work and sufficiently rigid to hold its form when molded and carved to suit the case, and which will withstand the heat of the mouth without undergoing change.

Second: The plate or plates should be so shaped and smoothed as to be light, and to conform as nearly as possible to the finished denture, allowing for length of teeth, but without unnecessary bulk.

Third: When satisfied that the bite is correct, find a means to lock the plates, if in an edentulous mouth, so that when removed the perfect occlusion may be retained without disturbance.

If these rules are strictly adhered to, as hereafter described in detail, there will be no need for mechanical articulators, nor will it be necessary to see the patient again until the work is completed, when it may be placed in the mouth without touching with the file or grindstone.—W. W. EVANS, *International Dental Journal*.

**Dangers of Chloroform Anesthesia in England.**—The high death-rate under anesthetics during dental operations in England may possibly be accounted for in several ways:

In the first place, the more dangerous anesthetic, chloroform, is employed more extensively there than in this country.

In the second place, by reason of the increased humidity and cooler atmosphere, chloroform is less readily eliminated from the blood than in this climate. It has come to be a well-recognized fact that the dangers from chloroform in cold damp weather are greater than during warm dry weather.

In the third place, English physicians and dentists appear to be more willing than Americans to give chloroform to patients in the sitting position.—DR. THORNTON, *Dental Brief*.

**Controlling Nervous Patients.**—The first requisite is to control yourself, and when you find that you can no longer do this, dismiss the patient. We all at times come in contact with people who have no control over themselves, who want the best but will not stand the slightest pain. They are best described as bundles of nerves, and are liable to belong to that class who would rather nurse a pug dog than a baby. Is it our duty to undertake difficult operations at the expense of great nerve force, with results unsatisfactory at best? or shall we patch them up with plastics and recommend them to some fellow-practitioner that we have a grudge against? The dentist must indeed be a diplomat who can meet and control all classes under conditions which are often most exacting. To successfully combine gentleness and firmness is no small accomplishment.—F. H. METCALF, *Pacific Dental Gazette*.

**Skill Required for Cleaning Teeth.**—The placing of the teeth and adjacent parts in a perfectly clean and healthy condition requires more real skill and practical knowledge than the placing in of a filling. This statement may be regarded as an exaggeration, but it is certain that a careful consideration of all that this operation requires will convince the thoughtful mind that this is not an overstatement. Filling teeth is purely a mechanical operation, and, the foundation principles once acquired, it can be carried on continuously upon the same lines by one of ordinary mechanical ability. To clean teeth and place the adjacent structures in a normal healthy condition means not only an expert ability in the use of instruments, but a quite thorough knowledge of special pathology and therapeutics, and this can be only acquired by long months, and it may be years, of training.—*International Dental Journal*.

**Cleaning Teeth.**—The operation of "cleaning teeth" has too long been looked upon by a great many dentists as one of little consequence; little time or thought has been given to it, and this, with the small fee usually charged for such service,—though in many cases it merits nothing more,—has tended to lower it in the estimation of the public, and led to habits of uncleanness and the loss of innumerable teeth. Such practices, however, are giving way to the march of present-day dental progress, and there is reason to hope that within a few generations the practice of repairing the ravages of dental caries by crown and filling, or bridge and plate, may be of service most often only to those to whom progress means nothing, and who will not learn from the experience of others the value of preventive measures in combating dental disease, nor listen to that voice of progress which teaches dental hygiene in all its branches, as applied by the up-to-date practitioner or practiced by his patients.—*Pacific Dental Gazette*.

**Acute Empyema of the Maxillary Sinus.**—Dr. Linn Emerson, of Orange, N. J., briefly reports (*American Medicine*, April, 1902), a case which came under his care twenty-four hours after exposure on the forward deck of a

ferry-boat during a severe snowstorm. The diagnosis was confirmed by transillumination and by discharging the pus from the meatus after the application of a pledget of cotton saturated with a solution of adrenalin chlorid, 1 to 1000. The case recovered within five days, although the translucency of the two sides of the face did not become equalized for a month.

Five cases of acute empyema of the maxillary sinus (all men) are reported by Dr. Wladislaw Wroblewski, of Warsaw (*Archiv f. Lar. u. Rhin.*, 1900). These cases subsided spontaneously by resolution or after the employment of very mild measures.

(In some cases, as reported by Avellis in the same journal, acute empyema terminates in caseation.)—*Amer. Journ. of the Med. Sciences.*

**Dental Specialists.**—The time will come, indeed is already here, when dentistry will be divided into specialties. These will be classed as: Operative dentist; the dental mechanic, who will take all cases of prosthetic work, and assume the responsibility of them in the mouth; the "bridge-worker," who will confine his labors to that important branch. The oral surgeon will do nothing but care for the important surgical operations and the administration of anesthetics, and eventually, doubtless, oral prophylaxis will be cared for by men and women confining their labor exclusively to removing accretions upon the teeth. These all have now a place with the exception of the last, and when fully established the hour of labor need not be prolonged to the detriment of health, as at present.—*International Dental Journal.*

**Hypnotism and Dentistry.**—Hypnotism is not likely, we think, to be received with favor as an aid to the dentist's art. M. Moirand, a well-known Paris dentist, has, however, just described one case in which it was resorted to with complete success. A young man of seventeen presented himself with a decayed molar in the left side of the upper jaw, accompanied by alveolar periostitis. M. Moirand decided that extraction was necessary, but his patient refused to submit to the operation. His father proposed that he should be taken to M. Berillon, a specialist in hypnotism, and this was done. The hypnotist as the result of the interview simply told the young man that he must bear to M. Moirand a message to the effect that he must make an injection of cocain and take out the tooth without causing the slightest pain. The patient returned to the dentist's and sat down quietly in the chair. M. Moirand pretended to inject the cocain, took up his forceps, and removed the tooth. This proved to be a difficult task, and considerable force had to be employed, but the patient remained completely motionless, and seemed entirely insensible to pain.—*Brit. Journ. of Dental Science.*

**A Severe Case of Carbolic Acid Gangrene.**—There is reason, according to the observation of Sheldon (*Medical Record*, April 5, 1902), to believe that the idiosyncrasy of the patient and the surrounding conditions play a part in carbolic acid gangrene, and that such gangrene may extend beyond the borders of the area brought in contact with the acid. Two cases of gangrene following the local application of acid have been reported by Fisher, and the patients were brothers. Sheldon's first case was reported over a year ago. His second case was that of a woman, twenty-six years old, unmarried, with a negative history. She had applied a few drops of fifty per cent. solution of carbolic acid to a corn on the outer side of the second toe of the left foot for about half a minute, and the whole foot was then washed with water. Twelve hours later burning was felt over the entire foot, the affected toe was reddened and slightly swollen, except where the acid had been applied, which area was black and felt quite "dead." Destruction of tissue continued for five days. At the end of the first week the symptoms gradually abated, the dead skin sloughed, the redness disap-



peared, and evidences of resolution could be noted. The healing was slow and resulted in the forming of considerable amount of scar tissue. The treatment consisted in keeping the foot clean. During the progressive stage a dilute solution of cocain was occasionally applied to the foot to relieve pain. Two hypodermic injections of morphin were given for the same purpose. When resolution began, zinc oxid ointment and Lassar's paste were used locally. Two years prior to this case, the patient and her sister accidentally got some carbolic acid solution, strength unknown, on their fingers. The two fingers of the patient and a finger and thumb of the sister were affected somewhat as the patient's foot was affected. There was pain, burning, itching, and redness, with gangrene of the skin, followed by sloughing and resolution.—*Therapeutic Gazette*.

---

## HINTS, QUERIES, AND COMMENTS.

---

### Society of Professors of Dentistry.

THE Society of Professors of Dentistry of the German Universities, which is presided over by Dr. Miller, of Berlin, has again addressed a petition to the Federal Council, the text of which is as follows: "That the candidates for the diploma of dental surgeon shall not be permitted to take the examinations if they are not holders of a certificate of *maturité* [a German certificate of *maturité* is equivalent to an American baccalaureate degree]; and that the permission to substitute two semesters of study at the university by an apprenticeship of one year at a dentist's office shall be suppressed, and that all the studies which are part of the dental curriculum shall be pursued at the university."

---

## DENTAL SOCIETY ANNOUNCEMENTS.

---

### FIRST DISTRICT DENTAL SOCIETY OF ILLINOIS.

THE twentieth meeting of the First District Dental Society of Illinois will be held at Rock Island, Ill., September 23 and 24, 1902. Special railroad rates are being secured, and an interesting program is assured.

CLAUDE B. WARNER, *Sec'y*.

---

### SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

THE fifth annual meeting of the Southern California Dental Association will be held at Riverside, Cal., October 20 and 21, 1902. An interesting program has been provided.

LEWIS E. FORD, *Sec'y*.

---

### NORTHERN INDIANA DENTAL SOCIETY.

THE Northern Indiana Dental Society will hold its annual convention at South Bend, September 24 and 25, 1902. A good program will be provided and a large attendance is anticipated. All are invited to come, also to participate in the meeting.

M. A. PAYNE, *Sec'y*.

## VERMONT BOARD OF DENTAL EXAMINERS.

A MEETING of the Vermont Board of Dental Examiners will be held at the Pavilion Hotel, Montpelier, Wednesday, October 8, 1902, at 2 P.M., for the examination of candidates to practice dentistry. The examination will be in writing, and will include anatomy, physiology, bacteriology, chemistry, metallurgy, pathology, therapeutics, surgery, materia medica, anesthesia, operative and prosthetic dentistry, together with an operation in the mouth. Candidates must come prepared with instruments, rubber dam, and gold.

Applications, together with the fee, ten dollars, must be filed with the secretary on or before October 1, 1902.

GEO. F. CHENEY, *Sec'y.*

## AMERICAN SOCIETY OF ORTHODONTISTS.

THE second annual meeting of the American Society of Orthodontists will be held in Philadelphia, October 8, 9, and 10, 1902. Headquarters, Continental Hotel.

Papers: President's Address. "Normal and Pathological Anatomy of the Alveolar Process and Adjacent Tissue," M. H. Cryer. (Subject to be announced), Edward C. Kirk. "Art in Relation to Orthodontia," Edward H. Angle. "The Deformities of the Superior Maxilla from the Standpoint of the Rhinologist," C. H. Kohler. "The Causes of Malocclusion," Wm. J. Brady. "Retrusion of Both Jaws with a Single Appliance," R. Ottolengui. "Nasal Occlusion and Septal Deviation in their Relation to Antral Development and Facial Expression," Royal S. Copeland. "Orthodontia from the Standpoint of a Student," Anna Hopkins. "Distal Movement of Molars and Bicuspid Limiting Extraction," Lloyd S. Lourie. "Stationary and Removable Appliances, Alone and in Combination," H. A. Pullen. (Subjects to be announced)—W. Booth Pearsall, J. Humphries, J. E. Grevers.

Time will be reserved for the consideration of specimens, pertaining to orthodontia, which anyone may desire to present.

A cordial invitation is extended to the profession.

MILTON T. WATSON, *Sec'y*,  
270 Woodward Avenue, Detroit.

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

**Adressbuch** der Zahnkünstler, die im deutschen Reichs selbständig sind, sowie diejenigen Personen, welche die Zahnkunst als Neben-gewerbe mit betreiben. Hrsg. T. A. Stolper. Leipzig, 1900, 272 pp. 12°.

**Hygienische** Flugschriften, Heft 12: Zahn- und Mundkrank. München, 1902, 12 pp. 16°.

**Kunert** (A.) In welcher Weise soll eine vernünftige Mundpflege ausgiebt werden? Ein Wegweiser zur Erhaltung des

- Zähne und Verheilung mancherlei Erkrankungen. Leipzig, [1902], A. Langkammer, 40 pp. 8°.
- Polscher** (A.) Neues und Wahrheit über Plombiergold, Ledergold und Kohäsives Gold. Oppeln, 1902, G. Maske, 19 pp. 8°.
- Adamkiewicz** (A.) Neue Erfolge des Cancroin beim Krebs der Zunge, des Kehlkopfes, der Speiseröhre, des Magens und der Brustdrüse. Berl. klin. Wchnschr., 1902, xxxix, 569-572.—**Amerikanische** (Der) Dokortitel. Zahntech. Rundschau, Berl., 1902, No. 520.—**Amoedo** (O.) Sinusitis maxillares; su tratamiento por el cirujano dentista. Semana méd., Buenos Aires, 1902, ix, 39-45.—Los dientes del *Pitecantropus erectus* de Java. *Ibid.*: 107-110.—**Anderson** (Martha). Some notes concerning preparation of teeth for microscopic study. J. Am. M. Ass., Chicago, 1902, xxxix, 137.—**Angle** (E. H.) The metal ligature in orthodontia. Dental Cosmos, Phila., 1902, xlv, 454-456.—Méthode du professeur Angle pour la régularisation et la rétention des dents et pour le traitement des fractures des machoires. Progrès méd., Par., 1902, xxix, 130; 162.—**Askew** (J. B.) Reflex neurosis and its relation to dental pathology. Dental Headlight, Nashville, Tenn., 1902, xxiii, 108-111.—**Barbe**. Papillome de la commissure buccale. Ann. de dermat. et syph., Par., 1902, 4. s., iii, 630.—**Baudouin** (G.) Bec-de-lièvre chez un hérédito-syphilitique et syphilides secondaires. *Ibid.*: 625.—**Belcher** (W. W.) The preparation of cavities for plastics, with special reference to the use of matrices. Dental Office and Laboratory, Phila., 1902, xvi, 97-101.—**Behnke**. Die Vorbildung der Zahnärzte. Deutsche zahnärztl. Wehnschr., Wiesb., 1902, v, 111-113.—**Bennett** (A. G.) The origin of ideas and inventions, with comments on methods. Dental Cosmos, Phila., 1902, xlv, 819-825.—**Birchmore** (W. H.) Etiology of alveolar suppurations. Items Interest, N. Y., 1902, xxiv, 561-571.—**Blue** (W. R.) The teaching of bacteriology. Dental Cosmos, Phila., 1902, xlv, 715-717.—**Boniquet** (J.) Contribución al tratamiento de la caries de los dientes; respetos que merece la pulpa. Rev. de cien. méd. de Barcel., 1902, xxviii, 242-246.—**Bordes** (O.) Chloroform oder Aether? Zahnärztl. Rundschau, Berl., 1902, xi, No. 513.—**Boronow** (J.) Eine Entscheidung des Handelsministers über die Rechtstellung der Zahntechniker. Deutsche zahnärztl. Wehnschr., Wiesb., 1902, v, 139-144.—**Bourdet**. Treatment of pulp exposure in 1757. Transl. by W. H. Trueman. Dental Brief, Phila., 1902, vii, 368-373.—**Buchanan** (Rice R.) [1848-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 880.—**Bünger** (A.) Ein Fall von Resection des grössten Theiles des Unterkiefers und sein Ersatz. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 285-289.—**Carr** (S. F.) Metallurgy. Dental Headlight, Nashville, Tenn., 1902, xxiii, 104-108.—**Cathcart** (C. W.) Ligation of the lingual artery through the mouth in excising half of the tongue. Ann. Surg., Phila., 1902, xxxvi, 15.—**Cattell** (D. M.) Care, preparation and condensation of cohesive gold in a cavity. Dental Rev., Chicago, 1902, xxvi, 550-555. [Discussion], 577-583.—**Cheatham** (W.) Chancre of the tonsils. Medicine, Detroit, 1902, viii, 569-571.—**Chiwaki** (M.) Recent progress and present condition of dentistry in Japan. Dental Cosmos, Phila., 1902, xlv, 805-811.—**Chompret**. Sur un nouveau mode d'extraction des racines de grosses molaires inférieures. Rev. de stomatol., Par., 1902, ix, 291-293.—**Cobb** (C. M.) Empyema of the antrum. Laryngoscope, St. Louis, 1902, xii, 506-508.—**Coffin** (W. H.) What should an association journal be? J. Brit. Dent. Ass., Lond., 1902, n. s., xxiii, 335-340.—**Colyer** (S.) Oral sepsis, and some of its effects. Dental Summary, Toledo, Ohio, 1902, xxii, 402-411.—**Corbellini**. [Resección de los maxilares.] Semana méd., Buenos Aires, 1902, ix, 347-354.—**Coysh** (T. A.) A case of re-plantation. J. Brit. Dent. Ass., Lond., 1902, xxii, 345-348.—**Crenshaw** (W.) Cavity management in connection with the contour matrix. Dental Cosmos, Phila., 1902, xlv, 681-686.—The contour matrix. *Ibid.*: 830-832.—**de Cre-santignes**. Inhalateur à réservoir d'air pour l'anesthésie par le bromure d'éthyle, le chlorure d'éthyle, etc., dans les opérations de courte durée. J. de méd. de Par., 1902, 2. s., xiv, 268.—Also: Bull. gén. de thérap. [etc.], Par., 1902, cxliii, 847-851.—**Crile** (G.) Some operations for malignant disease of the mouth and neck. [Abstr.] Northwest. Lancet, Minneapolis, 1902, xxii, 243-245.—**Czarnowski** (A.) O niektórych ulatwieniach przy zdejmowaniu wycisków masa gipsowa. [Some aids for taking impressions in a mass of gypsum.] Przegl. dent., Warszawa, 1902, v, 31-35.—**Davis** (L. L.) Pyorrhoea alveolaris and prehistoric man. Dental Rev., Chicago, 1902, xxvi, 548-550. [Discussion], 570-577.—**Davis** (W. C.) Studies in therapeutics. Items Interest, N. Y., 1902, xxiv, 483-485.—**Debrand**. L'anesthésie chloroformique chez les cardiaques. Tribune méd., Par., 1902, 2. s., xxxiv, 489.—**De Lisle** (J.) Some popular errors about microbes. Internat. Dent. J., Phila., 1902, xxiii, 469-478. [Discussion], 502-508.—**Dervaux**. Syphil-ôme primitif de la lèvre supérieure, adé-



- nite cervicale contagion indirecte. J. d. sc. méd. de Lille, 1902, i, 586-588.—**von Dobrzyniecki** (A.) Beiträge zur Behandlung der chronischen Alveolarabszesse. Zahnärztl. Rundschau, Berlin, 1902, xi, No. 519.—*Also:* Med. Rundschau, Berl., 1902, 1109.—**von Donop** (F. R.) Zur Geschichte der künstlichen Zähne. Zahntech. Rundschau, Berl., 1902, No. 521.—**Drummond** (C. E.) Some experiments with trichloroacetic acid. Dental Cosmos, Phila., 1902, xlv, 458-460.—**Dunn** (W. C.) The advantages of the dentist of to-day. Dental Summary, Toledo, Ohio, 1902, xxii, 380-382.—**Durante** (D.) Sulla batteriologia del noma; ricerche batterioscopiche e sperimentali sopra un caso grave di gangrena della bocca in bambina con anemia splenica infettiva. Pediatria, Napoli, 1902, x, 232-244.—**Duret** (H.) La chloroformisation chez les cardiaques. Echo méd., Toulouse, 1902, 2. s., xvi, 277-281; 301.—**Ebi** (Edwin). [1837-1902.] In memoriam. Items Interest, N. Y., 1902, xxiv, 554.—**Elk** (B.) Pharmacopœa odontologica. Odont. Bl., Berl., 1902-3, vii, 86-89.—**Erben** (S.) Gaumenlähmung. Zahnärztl. Rundschau, Berl., 1902, xi, No. 517.—Palatal paralysis. Med. Press and Circ., Lond., 1902, n. s., lxxiv, 51.—**Febre** aphtosa n'uma creançã. Med. contemp., Lisb., 1902, xx, 193.—**Fernandès & Van Swieten**. Un cas de tuberculose de la langue. Ann. de l'Inst. chir. de Brux., 1902, ix, 107-110.—**Foveau de Courmelles**. La lumière chimique en art dentaire. Odontologie, Par., 1902, 2. s., xiv, 573-583.—**Fritzsche** (C.) Ein neues Verfahren für die Herstellung künstlicher Unterkiefer. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 262-276.—**Fry** (I. M.) Hemorrhage; to arrest. Dental Digest, Chicago, 1902, viii, 547.—**Gaito** (F.) Tubercolosi della faringe (forma lupos). Boll. d. mal. d. orecchio, d. gola e d. naso, Firenze, 1902, xx, 153-158.—**Gerber**. Meine Operationmethode der chronischen Kieferhöhlenempyeme. Deutsche med. Wchnschr., Leipz. u. Berl., 1902, xxviii, 481.—**Godon** (C.) Enseignement préparatoire théorique et pratique de la dentisterie opératoire. Odontologie, Par., 1902, 2. s., xiv, 593-620.—**Goslee** (H. J.) Use of the saddle in permanent bridges. Dental Summary, Toledo, Ohio, 1902, xxii, 383-390.—The band and dowel crown. Items Interest, N. Y., 1902, xxiv, 489-510.—*Also:* Items Interest, N. Y., 1902, xxiv, 572-581.—**Grayston** (W. C.) Accidents during nitrous oxide anæsthesia. Pacific Dent. Gaz., San Fran., 1902, x, 463-465.—**Guarnaccia** (E.) Sinechotomo palato-faringeo. Boll. d. mal. d. orecchio, d. gola e d. naso, Firenze, 1902, xx, 158.—**Hall** (T. F. W.) Fertilization of the dental pulp. Austral. J. Dent., Melbourne, 1902, v, 222-227.—**Hallopeau & Ribot** (A.) Sur une ulcération tuberculeuse des petites lèvres. Ann. de dermat. et syph., Par., 1902, 4. s., iii, 611.—**Harlan** (A. W.) The basis of dental medicine. Dental Cosmos, Phila., 1902, xlv, 853-866.—**Harmer** (L.) Zur Aetiologie der Zungen-, Gaumen-, Kehlkopf- und Nackenmuskellähmung. Wien. klin. Rundschau, 1902, xvi, 485; 511.—**Harrington** (A. J.) Membranous glossitis. Canad. Pract. and Rev., Toronto, 1902, xxvii, 332.—**Harris** (T. J.) Herpes of soft palate. Laryngoscope, St. Louis, 1902, xii, 533.—**Hasbrouck** (E. M.) Anæsthesia with combined nitrous oxide and ether. Wash. M. Ann., 1902, i, 118-122.—**Heitmüller**. Behandlung von Defekten der harten Zahnsubstanzen. Odont. Bl., Berl., 1902-3, vii, 89-94.—**Helot**. Corps étranger du laryngo-pharynx. Normandie méd., Rouen, 1902, xvii, 264.—**Henri** (V.) & **Malloizel** (L.) Sécrétion de la glande sous-maxillaire après la résection du ganglion cervical supérieur du sympathétique. Compt. rend. Soc. de biol., Par., 1902, 11. s., iv, 760.—**Hert** (B. S.) Filling or crown. Dental Digest, Chicago, 1902, viii, 548-550.—**Hewett** (A. C.) Analgesics in oral and minor surgery. Dental Cosmos, Phila., 1902, xlv, 476-484.—**Higher** (A.) entrance standard. [Edit.] *Ibid.* 516-519.—**Hill** (Orville E.) [1832-1902.] In memoriam. Items Interest, N. Y., 1902, xxiv, 553, port.—*Also:* Dental Cosmos, Phila., 1902, xlv, 775, port.—**Hilliard** (H.) Further notes on the use of the naso-pharyngeal tube for prolonged nitrous oxide anæsthesia. Lancet, Lond., 1902, i, 1824.—**Hirtz** (E.) Les stomatites d'apparence pseudo-membraneuse et leur traitement, la fétidité de l'haleine. Odontologie, Par., 1902, 2. s., xiv, 585-591.—**Hoag** (D. E.) Harmony between dentist and physician. J. Am. M. Ass., Chicago, 1902, xxxix, 266.—**Hodgen** (J. D.) Metallurgy: how to teach it. Dental Cosmos, Phila., 1902, xlv, 699-704.—**Hoff** (N. S.) Classroom methods. *Ibid.* 695-699.—**Hopkins** (S. A.) Some thoughts on the prevention of caries. Items Interest, N. Y., 1902, xxiv, 525-534.—**Howard** (F. E.) Some observations in connection with pyorrhœa alveolaris. Dental Cosmos, Phila., 1902, xlv, 827-830.—**Hruska** (F. M.) Entwurf einer Regelung des zahnärztlichen Standes und des zahntechnischen Wesens. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 512; 515; 516; 518; 519; 520; 521.—**Hutchinson** (J.), jr. Epithelioma of the tongue. Clin. J., Lond., 1902, xx, 156.—**Inglis** (O. E.) Some peculiar cases of dental resorption. Internat. Dent. J., Phila., 1902, xxiii, 479-483. [Discussion], 508-513.—**Irwin** (A.) Public dental service. Items Interest, N. Y., 1902, xxiv, 593-604. [Discussion], 614-622.—**Jacquet**. Pelade d'origine dentaire; traitement stomatologique; guérison très rapide. Ann. de dermat. et syph., Par., 1902, 4. s., iii, 616-620.—**Jalaguier**. Fistule congénitale du cou ouverte dans le pilier postérieur du voile du palais; opération; guérison. Bull. et mém. Soc. de chir. de Par., 1902, n. s., xxviii, 733.—**Jarecky** (H.) Hypertrophy of the lymphoid tissue at the base of tongue as a cause of cough. Am. J. M. Sc., Phila. and N. Y.,

- 1902, n. s., cxxiv, 76-80.—**Jefferson** (W. L.) On the relative value of fillings. J. Brit. Dent. Ass., Lond., 1902, n. s., xxiii, 341-344.—**Jenkins** (N. S.) Porcelain enamel. Dental Cosmos, Phila., 1902, xlv, 456-458.—*Also*: Items Interest, N. Y., 1902, xxiv, 582-585.—**Jesensky** (J.) Bakteriellni antagonismus v dutině ústní a jeho význam pro lidský organismus. [Bacterial antagonism in the buccal cavity and its significance for the human organism.] Casop. lek. česk., v. Praze, 1902, xli, 619-627.—**Jetzige** (Der) Stand der Porzellan-Einlagen-Arbeiten. Zahntech. Rundschau, Berl., 1902, Nos. 517; 519.—**Johnson** (C. N.) The management of the teeth up to the eighteenth year in months very susceptible to decay. Pacific Dent. Gaz., San Fran., 1902, x, 474-482.—**Kersting** (G.) Abnutzung der Zähne. Zahnärztl. Rundschau, Berl., 1902, xi, No. 509.—**Khowat** (V. V.) [Malignant tumors of the tonsils.] Russk. chir. arch., St. Petersburg, 1902, xviii, 429-521.—**King** (G.) Voie bucconale dans la neurectomie; pour la guérison du tic douloureux. Parole. Rev. internat. de rhinol. [etc.], Par., 1902, n. s., iv, 281-289.—**Kingsley** (Albigence Waldo). [1815-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 776.—**Kirk** (E. C.) The clinical and chemical study of a case of dental erosion. Items Interest, N. Y., 1902, xxiv, 511-525. [Discussion], 539-548.—**Kirk** (H. M.) The adaptation of artificial dentures. Dental Summary, Toledo, Ohio, 1902, xxii, 369-375.—**Kirkpatrick** (T. P. C.) The prolongation of nitrous oxide anaesthesia for dental operations by Patterson's method. Med. Press and Circ., Lond., 1902, n. s., lxxiv, 55-57.—**Knothe** (A.) Eine neue Technik der Herstellung metallener Gebissplatten. Zahntech. Reform, Berl., 1902, xxi, 126-129.—**Knupper** (F.) Ueber Calcium. Zahntech. Rundschau, Berl., 1902, No. 521.—**Koch** (A.) Ueber die Bedeutung der Tonsillen als Eingangs-pforten für infektiöse Erkrankungen und den Werth therapeutischer Massnahmen zur Verhütung der letzteren. Ztschr. f. Krankenpf., Berl., 1902, xxiv, 175-178.—**Kohnstamm** (O.) Der Nucleus salivatorius chordae tympani (nervi intermet.). Anat. Anz., Jena, 1902, xxi, 362.—**Kombinierte** Füllungen. Zahntech. Rundschau, Berl., 1902, Nos. 509; 510.—**Korff** (B.) Morphin-Scopolamin-Narkose. München. med. Wchnschr., 1902, xlix, 1133-1135.—**Kraemer** (W. W.) Dentistry in Central America. Items Interest, N. Y., 1902, xxiv, 486.—**Krakowski**. O wyjmowaniu zębów u cięzarnych. [Extracting the teeth of pregnant women.] Przegl. dent., Warszawa, 1901, iv, 387-400.—Alumoln-cement. *Ibid.*: 1902, v, 59-71.—**Krause** (F.) Ueber einen Fall von Trigemini-Neuralgie mit Narben-Epilepsie; Erfolg durch Exstirpation des ganglion Gasserii. Centralbl. f. Nerven- u. Psychiat., Berl. u. Leipz., 1902, n. F., xiii, 380-382.—**Kümmel** (H.) Zur Reform des zahnärztlichen Studiums. Deutsche zahnärztl. Wchnschr., Wiesb., 1902, v, 165-172.—**Kunert**. Die Maturität als Grundlage für das Studium der Zahnheilkunde: eine unerlässliche Forderung im Interesse des Volkswohls. *Ibid.*: 149-157.—**Kurpfuscherprozesse**. Zahnärztl. Rundschau, Berl., 1902, xi, No. 521.—**Kyle** (D. B.) The chemie pathology of the saliva and pharyngeal secretions (sialo-semeiology) (as a means of diagnosis). Am. Med., Phila., 1902, iv, 57-60.—**Laborde** (J.-V.) A propos de la discussion sur le chloroforme et ses accidents, à l'Académie de Médecine. Ann. de chir. et d'orthop., Par., 1902, xv, 172-180.—**Lacasse** (R.) Éruption dentaire précoce. Rev. de stomatol., Par., 1902, ix, 279-283.—**Lack** (L.) A case of thyrotomy for tuberculosis of larynx. Laryngoscope, St. Louis, 1902, xii, 541-544.—**Latham** (V. A.) Résumé of the histology of the dental pulp. J. Am. M. Ass., Chicago, 1902, xxxix, 63-74.—**Lazarus** (E.) Zahnarzt und Krankenkassen. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 514; 515.—**Lefas & Duclaux**. Rupture de la langue au cours de tractions rythmées. Bull. et mém. Soc. anat. de Par., 1902, lxxvii, 149.—**Leigh** (P. T.) A few notes on bridge-work. J. Brit. Dent. Ass., Lond., 1902, n. s., xxiii, 348.—**Lemerle** (L.) Du service militaire des chirurgiens-dentistes et des étudiants en chirurgie dentaire. Odontologie, Par., 1902, 2. s., xiv, 620-627.—**Lepkowski** (W.) & **L. Wachholz**. O zebach pod wzgledem sadowo-lekarskim. [The teeth in regard to legal medicine.] Przegl. dent., Warszawa, 1901, iv, 321-330; 355.—**Lind**. Eine neue Methode zur Erzeugung lokaler Anaesthesie. Zahntech. Rundschau, Berl., 1902, xi, No. 520.—**Linde** (T.) Die Lokal-Anaesthesie und deren Wert für den Zahnkünstler. *Ibid.*: 1902, No. 511.—**Lord** (Benjamin). [1819-1902.] Biographical sketch. Internat. Dent. J., Phila., 1902, xxiii, 531-534.—**Low** (W. S.) The anatomical tonsil-tome. Lancet, Lond., 1902, ii, 27.—**Lucas-Championnière**. Le chloroforme à l'Académie; chloroformisation chez les cardiaques; nature des accidents; préceptes pour la sécurité; organisation de l'anesthésie hospitalière. J. de méd. et chir. prat., Par., 1902, lxxiii, 161-172.—**Lührse** (L.) Zahnheilkunde und Militärmedizin. Deutsche Monatschr. f. Zahnh., Leipz., 1902, xx, 276-284.—**McCandless** (A. W.) Impressions. Dental Cosmos, Phila., 1902, xlv, 825.—**McCullough** (P. B.) Burnished cap-crown system. Dental Brief, Phila., 1902, vii, 374-379.—**Mackall** (Richard C.) [1822-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 523.—**Mahu** (G.) Le morcellement des amygdales palatines. Presse méd., Par., 1902, i, 582.—**Malherbe** (H.) Sur le traitement de l'angine de Vincent et la stomatite ulcéro-membraneuse. Gaz. med. de Nantes, 1901-2, xx, 274-277.—**Malloizel** (L.) La salive psychique de la glande sous-maxillaire peut être liquide ou visqueuse suivant l'excitant. Compt. rend. Soc. de biol., Par., 1902, 11. s., iv, 761.—**Matagne**.



- Syphilis tertiaire de la langue. Presse méd. belge, Brux., 1902, liv. 390.—**Miller** (W. D.) The presence of bacterial plaques on the teeth and their significance. Dental Cosmos, Phila., 1902, xlv, 425-446.—**Milward** (F.V.) An inhaler for giving mixtures of ether and chloroform. Lancet, Lond., 1902, i, 1779.—**Möller** (F.) Ueber Nebennierenextrakt in der Zahnheilkunde. Zahntechn. Rundschau, Berl., 1902, xi, No. 521.—**Moodie** (E. L.) Large actinomycoma of the liver, secondary to a circumscribed actinomycosis of the upper jaw. J. Path. and Bacteriol., Edinb. and Lond., 1902, viii, 239-242.—**Morestin** (H.) Cancer de la gencive propagé au maxillaire inférieur; résection du maxillaire de la correction des déviations du maxillaire après résection latérale partielle. Bull. et mém. Soc. anat. de Par., 1902, lxxvii, 180-182.—**Traitement des pertes de substance du maxillaire inférieur par la mobilisation d'un pont osseux. Ibid:** 183-185.—**Epithélioma à début commissural; envahissement des deux lèvres, de la peau, des ganglions génieus inférieur et sous maxillaires, et adhérence à la mâchoire; ablation; autoplastie aux dépens de la joue opposée. Ibid:** 185-188.—**Mosse.** Tonsillencarcinome. Berl. klin. Wchnschr., 1902, xxxix, 596.—**Newell** (E. B.) Pyorrhea alveolaris. Dental Reg., Cincin., 1902, lvi, 331-354.—**Noble** (J. H.) A test tube for sterilizing eucaim solutions. Dental Cosmos, Phila., 1902, xlv, 463.—**Nones** (R. H.) Classroom method of teaching. *Ibid:* 460-463.—**Noyes** (F. B.) A comparative study of the attachment of the teeth. J. Am. M. Ass., Chicago, 1902, xxxix, 242-244.—**Ottolengui** (R.) Artificial dentures, with special relation to the impression, taking the bite, and articulation. Dental Cosmos, Phila., 1902, xlv, 446-454.—**Owen** (Lura Frances). Dental observations in the South Sea Islands. Dental J., Ann Arbor, 1902, xi, 22-24.—**Pawelz.** Die Luft im Vulkanisier-Apparat. Zahntechn. Rundschau, Berl., 1902, Nos. 512; 513.—**Payne** (R. E.) Implantation; one of the permanent operations in dentistry. Dental Digest, Chicago, 1902, viii, 566-572.—**Peck** (A. H.) Physical diagnosis as related to dental college curricula. *Ibid:* 550-555.—**Peirce** (C. N.) Function: its influence on structure. Items Interest, N. Y., 1902, xxiv, 585-592. [Discussion], 609-614.—**Pfaff.** Zahnheilkunde und Medizin. Deutsche zahnärztl. Wchnschr., Wiesb., 1902, v, 181-186.—**Philipp.** Ist es möglich, auch nach bestandenen Maturum die für den Zahnarzt nötige praktische Ausbildung zu erlangen? *Ibid:* 110.—**Polyak.** Operierter Fall von Kiefercyste, welche mit Mund und Nase communicirte und den linken Stockzahn entheilt. Pest. med.-chir. Presse, Budapest, 1902, xxxviii, 606.—**Poncet** (A.) A propos de la chloroformisation et de l'éthérisation. Gaz. d. hôp. de Lyon, 1902, iii, 303-318.—**Poncet** (A.) & **L. Berard.** De l'actinomycose humaine en France; sa fréquence; son pronostic éloigné. *Ibid:* 319-329.—**Port** (G.) Die Aetherrauschnarkose. Deutsche Monatschr. f. Zahnh., 1902, xx, 257-261.—**Potherat.** Kyste dermoïde du plancher de la bouche. Bull. et mém. Soc. de chir. de Par., 1902, n. s., xxviii, 737.—**Powell** (T. E.) Hemorrhages. Dental Rev., Chicago, 1902, xxvi, 559-562.—**Primrose** (F.) The status of the dental profession. Dental Cosmos, Phila., 1902, xlv, 485-493.—**Proseus** (F. W.) Formaldehyde. Dental Digest, Chicago, 1902, viii, 555-563.—**Rachford** (B. K.) Hare-lip. Tr. Am. Pediat. Soc., N. Y., 1901, xiii, 242-249.—**Randall** (O. W.) A plea for porcelain floors in the operating room. Items Interest, N. Y., 1902, xxiv, 487.—**Reber** (W.) Grave injury to a dentist's eye during operative work. Pacific Dent. Gaz., San Fran., 1902, x, 485-491.—**Regner** (J.) Ueber Zahnregulierungen. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 516; 517; 518.—**Renshaw** (K.) The functions of the epiglottis. Brit. M. J., Lond., 1902, ii, 173-175.—**Report** of the special chloroform committee. *Ibid:* 116-128.—**Rochette** (A.) Carie dentaire; ablation d'un séquestre du maxillaire supérieur gauche. J. d. sc. méd. de Lille, 1902, i, 588.—**Rodier** (H.) Résultats éloignés de soixante greffes dentaires que j'ai faites. Rev. de stomatol., Par., 1902, ix, 283-291.—**Rodman** (W. L.) Removal of superior maxilla. Internat. Clin., Phila., 1902, 12. s., i, 151-155, 1 pl.—**Operation for cleft palate and harelip. Ibid:** 155-158.—**Rohrbach** (J.) Tritormolpastillen. Zahntechn. Rundschau, Berl., 1902, No. 511.—**Rolland** (G.) L'art dentaire en Angleterre, en Italie et en Suisse. Gaz. hebdom. d. sc. méd. de Bordeaux, 1902, xxiii, 342-344.—**Rolland & F. Robinson.** Somnoforme. J. Brit. Dent. Ass., Lond., 1902, n. s., xxiii, 321-334.—**Sabaniyeff** (I. F.) [Two cases of cicatricial contraction of the jaws, treated surgically.] Russk. chir. arch., St. Petersburg, 1902, xviii, 330-340.—**Schröder** (H.) Mitteilungen aus dem zahnärztlichen Institut der Universität Greifswald. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 512; 513; 514; 515; 516; 517; 518; 519; 520; 521.—**Schütze.** Der Phenylkämpfer und sein Gebrauch in der Praxis des Zahnkünstlers. Zahntechn. Rundschau, Berl., 1902, No. 518.—**Schwartz** (G. W.) A case of porcelain bridge-work. Dental Cosmos, Phila., 1902, xlv, 704.—**Sibley** (F. L.) Arteriosclerosis in pyorrhea alveolaris. Dental Digest, Phila., 1902, viii, 468-471.—**Smith** (D. D.) An original system of tightening loose lower incisors and cuspids, embracing a method of securing substitutes without clasps or plates, when these teeth are missing; together with a discussion of the question of pulp devitalization, when and how, in sound teeth. *Ibid:* 535-547.—**Smith** (F. M.) To restore the cutting or grinding surfaces of abraded teeth with gold. Internat. Dent. J., Phila., 1902, xxiii, 483-485. [Discussion], 501.—**Spillmann.** Urticaria bulleuse de la cavité buccale. Ann. de der-



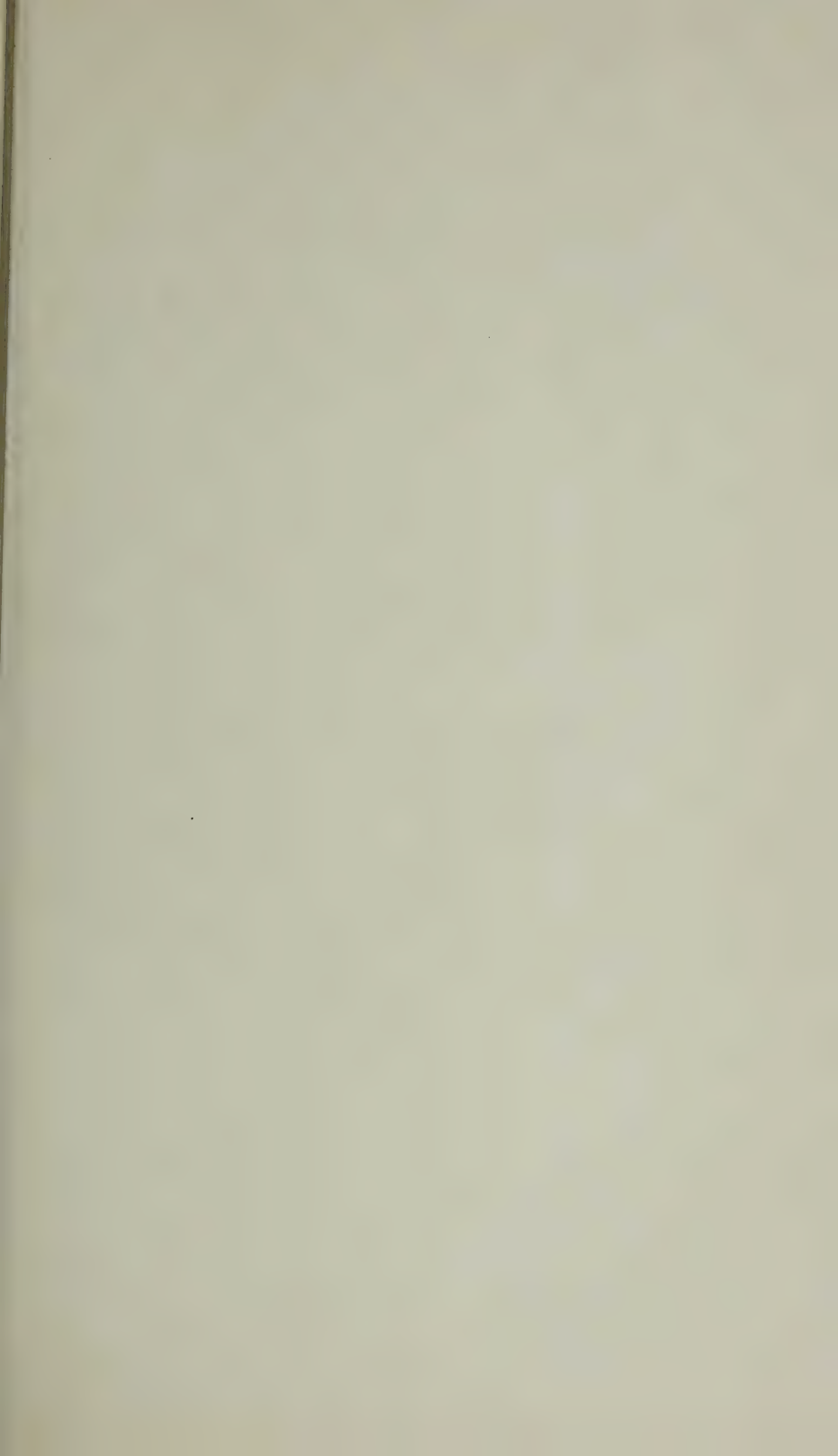
- mat. et syph., Par., 1902, 4. s., iii, 632.—**Stahr** (H.) Ueber die Papilla foliata beim wilden und beim domesticirten Kaninchen. Anat. Anz., Jena, 1902, xxi, 354-361.—**Strazza** (G.) A proposito di un caso anomalo di sinusite mascellare cronica. [Sur un cas particulier de sinusite maxillaire chronique. Rés., 157.] Ann. di laringol. [etc.], Genova, 1902, iii, 149-158.—**Stern** (D.) Essential oils; their application in dentistry. Dental Digest, Chicago, 1902, viii, 462-466.—**Stevens** (E. L.) To remove contents of alveolar abscess. *Ibid.*: 460.—**Stoddard** (A. H.) Some things I have found useful in practice. Internat. Dent. J., Phila., 1902, xxiii, 465-469, 1 pl. [Discussion], 515-521.—**Sutphen** (H. S.) Conservative filling for tooth preservation. Items Interest, N. Y., 1902, xxiv, 605-608. [Discussion], 623-628.—**Szabó** (J.) Die accidentale Eröffnung der gesunden Kieferhöhle gelegentlich einer Zahnextraktion. Zahntech. Reform, Berl., 1902, xxi, 137-139.—**Taft** (J.) The power of association. Dental Rev., Chicago, 1902, xxvi, 537-548. [Discussion], 563-570.—**Tenney** (L. S.) Classroom methods of teaching. Dental Cosmos, Phila., 1902, xlv, 705-709.—**Thévenot** (L.) Deux actinomycoses cervico-faciales. Gaz. d. hôp., Par., 1902, lxxiv, 733-736.—**Thompson** (G. H.) Art in vulcanite. Dental Digest, Chicago, 1902, viii, 460-462.—**Thornton** (E. Q.) General anæsthesia and anæsthesia by cataphoresis, with special reference to their application in operations within the mouth. Dental Brief, Phila., 1902, vii, 421-436. [Discussion], 437-441.—**Tileston** (H. B.) Inlays: porcelain and gold. Dental Cosmos, Phila., 1902, xlv, 811-819.—**Tomes** (C. S.) On the movements of the mandible. J. Brit. Dent. Ass., Lond., 1902, xxiii, 340.—**Trémolières** (F.) Etiologie et pathogénie de la pelade; théorie dentaire de L. Jacquet. Presse méd., Par., 1902, i, 567-570.—**Vacher** (L.) Emploi du chlorure d'éthyle chimiquement pur comme anesthésique général. Ann. d. mal. de l'oreille, du larynx [etc.], Par., 1902, xxviii, 465-469.—**Van Duzee** (C. A.) The shock of dental operations. Dental Cosmos, Phila., 1902, xlv, 690-695.—**Viau** (G.) Tropicocain. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 509; 511.—**Vicentini** (F.) Further remarks on "leptothrix racemosa" according to Mr. Kenneth W. Goadby, of London. Dental Cosmos, Phila., 1902, xlv, 673-681.—**Vincenzo** (G.) Di una localizzazione di tubercolosi boccale. Gazz. d. osp., Milano, 1902, xxiii, 631.—**Voituriez** La fièvre aphteuse chez l'homme. J. de sc. méd. de Lille, 1902, i, 569-579.—**Warning** (E.) Behandling af medfodt Ganespalte med protese og Taleundervising. [Treatment of congenital cleft palate by prosthesis and instruction in talking.] Ugeskr. f. Læger, Kopenh., 1902, 5 R., ix, 559-563.—**Wessells** (J. F.) Alveolar abscess; its complications and treatment. Dental Brief, Phila., 1902, vii, 361-367. [Discussion], 374-379.—**Wetherbee** (Isaac Josiah). [1817-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 880, port.—**Wilson** (G. H.) The teaching of prosthetic dentistry. *Ibid.*: 709-715.—**Wolf-ram** (J.) Phosphat-Zemente. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 510; 511; 515.—**Young** (R. C.) Asepsis. Dental Cosmos, Phila., 1902, xlv, 686-690.—**Zboril** (C.) Własny sposób przygotowania zębów sztyftowych. [New method of preparing teeth without a crown.] Przegl. dent., Warszawa, 1902, v, 1-5. —Nowy sposób naprawy zębów sztyftowych i robót mostkowych za pomocą lutowania w ustach pacjenta. [New method of preparing crowns of teeth and bridge work by solder in mouth of patient.] *Ibid.*: 27-30.—**Zielinski** (W.) O protetycznem leczeniu braków podniebienia. [Prosthesis in absence of the palate.] *Ibid.*: 1901, iv, 331-339; 366.—**Zolkover** (M. A.) [12 cases of complete resection of the upper jaw.] Chirurgia, Mosk., 1902, xi, 648-659.—**Zwilling** (H.) Epipharyngealis sarcomák. [Epipharyngeal sarcomata.] Gyógyászat, Budapest, 1902, xlii, 420-424.

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING JULY, 1902.

- July 1.—No. 703,720, to JAMES E. DUNN. Artificial denture.  
 " —No. 703,729, to JULIUS KUPFER. Dental mouth-mirror.  
 " 8.—No. 704,428, to WILLIAM Y. ALLEN. Device for grinding tapers.  
 " 15.—No. 704,601, to JOSEPH E. VAN NOSTRAN. Dental cuspidor.  
 " —No. 704,937, to ADOLPH W. SCHRAMM. Dental engine.  
 " 22.—No. 705,143, to JAMES J. REYNOLDS. Artificial tooth.  
 " —No. 705,320, to SEABIRD H. B. COCHRANE. Dental forceps.  
 " —No. 705,532, to HENRY D. JUSTI. Mount for artificial teeth.  
 " —No. 705,546, to THOMAS STEELE. Artificial tooth.  
 " 29.—No. 705,972, to THOMAS STEELE. Mold for artificial tooth.





*S. G. Hancock*



# THE DENTAL COSMOS.

---

VOL. XLIV. PHILADELPHIA, OCTOBER, 1902.

---

No. 10.

## ORIGINAL COMMUNICATIONS.

---

### THE HYGIENE OF BRIDGE-WORK AS EXEMPLIFIED BY A PIECE OF REMOVABLE PORCELAIN BRIDGE.

BY JOSEPH HEAD, M.D., D.D.S., PHILADELPHIA, PA.

(Read before the New York State Dental Society at Albany, May 15, 1902.)

THE frequency of gum infection and the ease with which this infection results in pyorrhea alveolaris has long taught the thoughtful dentist that all dental substitutes must be constructed primarily so that they can be kept scrupulously clean. Much has been written of men who have lived to a good old age, who never saw a tooth-brush or heard of a mouth-wash. Such people have existed and do exist; but, also, strong and healthy people have lived for years covered with vermin, and still live. These latter no doubt think the conventional man over-fastidious, but, in spite of such sneers, cultured men will never again willingly harbor fleas, and the time is surely coming when it will be considered equally revolting for a mouth to swarm with the micro-organisms of putrescence and disease.

Dentists are those by whom this reformation is to be secured, and therefore dentists should be the last to increase the contamination in the mouths of their patients through filth-collecting appliances. Many a dentist, when cleansing a set of teeth covered with putrescent tartar, has wished that he could take those teeth from the mouth, scrape them, boil them in some antiseptic, polish them on the lathe and put them back into their original sockets. He knows in his heart of hearts that that is the only method by which he can be absolutely sure of making such teeth perfectly clean and the gums free from infection. But as this is not feasible, he, through three or four sittings, with the necessity for his greatest care and skill, scrapes and sterilizes, almost as well as he could do in a few moments if the teeth were out of the mouth and in his hand.

The perfect cleansing of infected gums and teeth is now recognized as one of the most difficult operations that the dentist has to perform. Perfect cleansing of the teeth is a task that the average patient cannot do for himself without professional assistance. Yet in spite of all this difficulty in cleansing the natural teeth, each year hundreds of dental appliances are inserted, so constructed that even dental assistance cannot keep them wholesome and clean. Unless a dental appliance can be kept at least as clean as the teeth could be without it, that dental appliance has no excuse for existence. Mouths at best are none too clean. He who places a filth-collecting appliance, no matter how beautiful that appliance may appear, has injured when he claims to have benefited.

These truths are so self-evident as to be elementary, and I would ask pardon for accentuating them, did I not hope to use them as axioms to illustrate why, all other things being equal, removable bridge-work is to be preferred to stationary bridge-work.

If, as is evident, the natural teeth could be more perfectly cleansed out of the mouth, it needs no argument to prove that the removable bridge-work of itself is preferable to stationary bridge-work, for the former can be made cleaner than the teeth, while the latter at

FIG. 1.



FIG. 2.



best can only be made as clean. All stationary or saddle bridge-work should be so constructed that each day floss silk can be passed between every part of the structure and the gum on which it rests. And this, as I shall presently demonstrate, is quite possible even where the closest apposition is obtained between the structure and the gum, providing the appliance be made to touch the tissues on a curve approximating a straight line, as in Fig. 1.

If, as in Fig. 2, the gum contact has a sharp curve, the passage of a thread will be difficult or impossible. The saddle bridge is in many instances so much more satisfactory than the removable bridge that it will always have its advocates if it is constructed so that the bacteria and products of fermentation can be removed each day from the gum line. Under these conditions, its use is perfectly defensible, but if such hygienic provision be not made, such an appliance is contrary to the modern science of bacteriology and hygiene. The advocates of the ordinary saddle bridge claim that if the bridge be made to press firmly upon the gum, such close apposition is obtained that food collections do not occur. They say that, after years of use, on removing such an appliance a slight reddening or superficial stasis of the gum tissue alone will be found.

But even this superficial stasis is a serious menace. What causes this superficial stasis, this reddening, this exfoliation of epithelial cells? It does not occur under removable bridge-work, where daily

cleansing and sterilization are performed. Clean, well-fitting metal or porcelain would never cause it. The superficial stasis can only arise from bacterial infection, and such infection is a menace to the peridental membrane of the teeth to which the structure is attached. No joint of gum and metal, however close, can hope to exclude the bacteria, and while mucin is secreted by the gum, such bacteria will never lack nourishment even though the ordinary food in mastication may possibly not enter. And even, for the sake of argument, if such a tight joint were obtained between the structure and the gum as to exclude bacteria, this tight joint could not exist where the bridge joined the neck of the tooth. For here we have the free margin of the gum which cannot be cleansed and also there is the movement of the tooth in the socket which must allow liquid proteids to enter, thus furnishing food for the germs of putrefaction and fermentation. These, in their turn, are most likely to cause peridental infection,—the greatest possible danger that can threaten the welfare of the teeth.

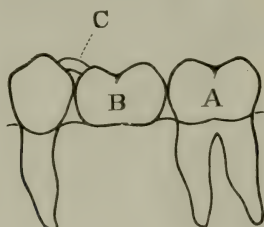
Hence we must conclude that the use of the saddle bridge so constructed as to be incapable of being cleansed, is unwarranted. It is true that some affirm that these same bridges have been used with satisfaction for years, and plead that this should count for something in their favor, but it must be remembered that what may be tolerated in one mouth may not be tolerated in another. Some mouths breed dangerous infections while others do not, and we can usually only be sure that a filth-collecting bridge will be safely tolerated by the tissues after we have seen it proved. And we have no right to subject our patient's mouth to the risk of infection because a certain limited percentage of mouths can withstand infection without serious consequences. Whenever a stationary bridge is placed in the mouth, the mouth should first be carefully examined as to how much care the patient should take to keep the teeth generally clean. Mouths, as before stated, vary in this respect. Some will collect large quantities of infectious tartar in a week, while others will remain comparatively clean, with half the care, for months at a time. Thus the individuality of the patient should be studied; mouth-washes should be prescribed, and he should be told just how often his teeth need to be polished, and how often the brush, the floss silk, and the mouth-wash, should be used. Patients as a rule are grateful for such instruction, and will readily appreciate its importance. When by thorough treatment the mouth has been freed from infections, two kinds of stationary bridges may be employed. First: The bridge fastened only on one side and supported by a pin resting on the sulcus of the tooth on the other side, thus allowing free movement of the tooth and bridge, and also allowing the passage of floss silk under the pin down between the bridge and the gum tissues. Or, secondly: A bridge fastened on both sides, which has the advantage of greater stability, but possesses the great disadvantage of preventing the natural movement of the teeth.

The bridge fastened on one side and supported on the other may be constructed as follows (see Fig. 3):



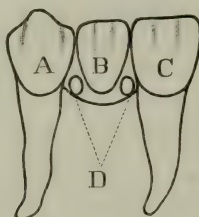
A represents a crown, B represents the dummy or bridge, c represents a pin from the bridge resting on the sulcus of the bicuspid, under which, as before stated, a piece of floss silk can be slipped and passed along the gum even to the crown, A. Where a single space is to be spanned, and the abutments are firm, this is a most valuable bridge, as it has ample stability and can be cleansed as thoroughly and easily as an ordinary crown.

FIG. 3.



If, however, greater stability is needed, and the bridge has to be fastened at each side, as is frequently necessary with the anterior teeth, the following device can be used for cleansing the underlying gum: Fig. 4 represents a lateral incisor bridge; A is the canine crown, c the central incisor crown, B the lateral incisor dummy resting snugly on the gum; D represents two small grooves going under the bridge between the necks of the crowns and the lateral incisor dummy. Through these holes floss silk can be passed, and the bridge and the necks of the teeth be easily cleaned each day. These holes, while invisible to the observer, allow free passage to the mouth-wash, which when properly used can keep the necks of the teeth as free from bacterial deposits as though the bridge were not present.

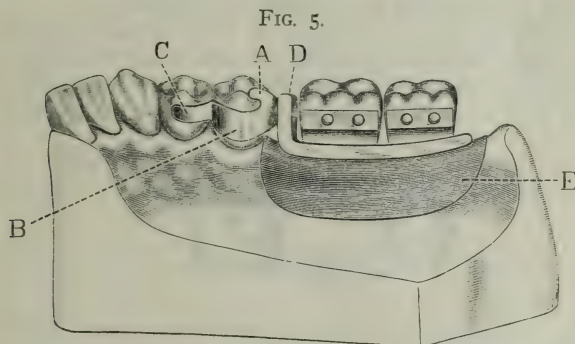
FIG. 4.



The movable porcelain bridges that are responsible for this long preamble on bridge-work will now be considered. The first, intended to replace lost molars where support from the teeth is possible on one side only, is constructed as follows (see Fig. 5) :

As observed, the teeth back of the second bicuspid are missing. A gold clasp, B, No. 22 gauge, is fitted to the second bicuspid; to the ends of the clasp gold spurs, c, which half embrace the first bicuspid near the gum line, are fitted and soldered. Then a piece of pure gold, gauge No. 36, is soldered to the clasp at the posterior

aspect of the second bicuspid and burnished into the occlusal groove. When this is stiffened with gold and solder, it will form a spud that will prevent the clasp from being driven into the gum by the force of mastication. The clasp and spud should now be polished to the lines desired, and a thin coating of borax flowed over them so as to expedite future soldering. They should be then placed upon the model and a right-angle piece of No. 14 platinum-iridium wire should be adjusted to it, and to the gum line, as in Fig. 5, D. Then platinum foil one one-thousandth of an inch, E, should be burnished on the ridge to fit the model. The angle wire should be placed in position on it; continuous gum body should be placed on the angle wire and platinum foil, and rubber teeth of the proper size and shade should be placed upon the body just as if it were the preparation of a rubber case. When the body has been carved to the proper lines of the gum, the platinum foil, the angle bar, and the teeth and body should all be removed together, placed in the oven, and



given a thorough glaze. When the porcelain is cool, the platinum foil should be stripped off, new foil should be burnished to the model, new continuous gum placed on the foil and the porcelain pressed down hard upon it to a point where the articulation is a little high. This excess of articulation is necessary in order that perfect occlusion may be obtained when the case is finally fitted in the mouth, and the second portion of body is necessary to make up for the contraction caused by the fusing of the porcelain piece in the first bake. When the porcelain has been carved a second time to a satisfactory line it is removed again on the platinum foil and placed in the oven and baked once more.

After baking and after the platinum foil is removed, the porcelain block should accurately fit the model. If gum enamel be necessary there will have to be a third baking, but for this no platinum foil will be needed to preserve the contour, as the continuous gum body fuses at a higher point than the enamel. Fig. 6 shows the finished piece.

When the porcelain block is finished we have a gold double clasp with spud, and a porcelain block with a platinum bar running through it. It now remains to join them together. The clasp is placed in position on the model; the end of the porcelain block that

goes next to the clasp should be ground until the platinum is clean and fresh enough to receive the solder. Then to the end of the ground porcelain—a thin backing of pure gold should be burnished to make a tight joint with the porcelain, and the middle of this backing should be torn so as to expose the platinum and make a union of solder with the clasp and gold backing and platinum bar easy. The clasp and block should then be placed in position and

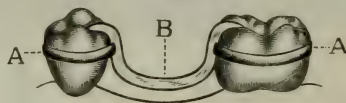
FIG. 6.



soldered in the usual way. It might be well to state that varnishing the gum enamel with shellac varnish prevents any of the investment from sticking to it during the process of soldering.

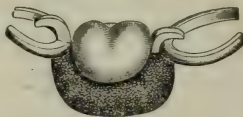
The other bridge I wish to speak of is for a space where a single molar or bicuspid is missing, with a tooth on each side sufficiently strong for an abutment. It is made of porcelain attached to platinum clasps as follows (see Fig. 7): A represents iridio-platinum

FIG. 7.



clasps of No. 14 gauge wire made to encircle the molar and bicuspid. A U-piece, B, of the same wire is soldered to the clasps so as to rest on the grinding surfaces of the molar and bicuspid and also conform somewhat to the gum line. As in the other case, platinum foil is burnished to fit the model in between the teeth. The clasps and connecting platinum U are placed in position, continuous gum body is placed on the platinum and wire, and a rubber tooth is ad-

FIG. 8.



justed as in the other case. Two bakings with platinum foil are required and one for the gum enamel, which finish the appliance, as no further soldering is required. It might be well to state that platinum solder is of necessity used in the construction of the framework that holds the clasps in position. Fig. 8 shows the finished piece.

These devices are not theoretical; they are practical,—are in fact being worn by many patients at this moment. They have the great



advantage of cleanliness and stability; and last, but not least, their use does not necessitate the laceration or removing of the enamel from the teeth that serve as abutments. These spuds prevent motion under mastication and so avoid wear and cutting of the supporting teeth, and, if the patient is properly instructed, such appliances can ordinarily be worn for years with comfort and safety.

---

## SHOULD THE SO-CALLED FUNDAMENTAL BRANCHES IN THE STUDY OF DENTISTRY AND MEDICINE BE TAUGHT BY THE SAME FACULTY?

BY HENRY BEATES, JR., M.D., PHILADELPHIA.

(Read before the Pennsylvania State Dental Society at Bedford, Pa., July 9, 1902.)

**M**R. PRESIDENT AND MEMBERS OF THE PENNSYLVANIA STATE DENTAL SOCIETY: When your worthy president honored me with a request to submit to this distinguished body some thoughts for consideration relative to one feature of dental education, as it conventionally obtains, acquiescence was accompanied with no little hesitancy; and were it not that years of experience in the official discharge of duty as an administrator of the law governing the practice of medicine in this commonwealth necessitated a careful study of those features of educational requirement common,—common, please observe, only *in some respects*,—to both dentistry and medicine, the presumption of presenting to you the opinion entertained by me upon the question which our title embodies would not have been ventured. Again, the request is made at a time when the examination of more than four hundred candidates for medical licensure is in progress, and this obviously prevents that proper preparation of a paper which the importance of the occasion, as well as the subject, demands.

Asking your indulgence, therefore, for the many shortcomings these remarks must necessarily possess, attention is directed to the fact that consideration of the topic will center around principles rather than associated details. It is with the conviction that the cause involving the yet-to-be-established, and greatly needed, proper system of education for dentistry, as well as for medicine, will be advantaged by a consideration of the closely related yet widely differing features characterizing the teaching, as well as phases taught, of those branches common to each, at least in name, that the question is propounded, "Should the So-called Fundamental Branches in the Study of Dentistry and Medicine be Taught by the Same Faculty?"

These branches are distinctively sciences, and comprise anatomy, physiology, chemistry, and pathology. Mastery of certain of their phases is as essential for the highest possible achievements of the dentist as for the physician. Observe that the same is equally true for the artist, whether painter or sculptor; the botanist, agriculturist and zoölogist, and the follower of many of the utilitarian arts; and when this fact is recognized, explanation is vouchsafed

as to why there naturally arises a cause for the formulation and consideration of the question which our title includes.

That these fundamentals *are* taught by the same faculty is a fact known to all of us; that the medical faculty seems to possess this questionable privilege might be advantageously emphasized, as well as the opposite fact that a faculty distinctively dental does not! These apparently insignificant facts are full of suggestion, and indicate commercial reasons, rather than those intrinsically scholarly and meritorious in character.

Before examining into the nature of those influences which resulted in one faculty teaching fundamentals common *largely in name*, be it observed, rather than in specific requirement, for the student respectively of dentistry and medicine, permit me to make a citation from Spencer on Education, as it enunciates, or rather sets forth, a principle which should underlie all study of questions of this character, whether engaged in by advocates or opponents: "To prepare us for complete living is the function which education has to discharge; and the only rational mode of judging of any educational course is to judge in what degree it discharges such function." To the fundamentals in our respective professions this principle applies with tremendous force! Specificity of requirement, specificity of detail, specificity of means to end, should engage the attention of pedagogues, rather than the too widely misapplied and necessarily superficial generalizations, when the serious duty of founding a *rational curriculum* for any pursuit challenges right action.

As a generalization, no one attempts to deny that mastery in their entirety of the sciences which our fundamentals include would constitute one type of a liberal education, and from the standpoint of a liberal education they are rationally to be demanded. At this point, however, and specifically as dentists (and may not medicine be included?) the unavoidable line of departure prominently looms up before us and forces serious deliberation.

Here, again, we find ourselves forced to recognize another principle which must ever be borne in mind and its intrinsic value properly appreciated if right action is to be instituted. The principle is tersely stated by Bacon, who formulated it in the words "The Relative Values of Knowledges." Need this occasion require the assertion that it is the absence of a due regard and consideration of this vitally important principle,—not only, it is regretfully remarked, in the administration of the curriculum for dentistry and medicine, but in education in general,—which explains the glaring defects and faulty methods encountered on every side? It must not be forgotten, either, that the past prevalence of these conditions more or less powerfully influences present thought, and it is of the utmost importance that our subject be approached with minds "chemically pure" if a correct conclusion is to be reached. The great English philosopher uttered a truth the importance of which is only beginning to be comprehended, when he said, "If there needs any further evidence of the rude, undeveloped character of our education, we have it in the fact that the comparative worths of

different kinds of knowledge have been as yet scarcely even discussed, much less discussed in a methodic way with definite results. Not only is it that no standard of relative values has yet been agreed upon, but the existence of any such standard has not been conceived in any clear manner. And not only is it that the existence of any such standard has not been clearly conceived, but the need for it seems to have been scarcely even felt."

In the past, when subject-matter, methods of study, and teaching have been the subject of consideration, to the general proposition that students of dentistry and medicine should pursue anatomy, physiology, chemistry, and pathology, the respective faculties accorded assent,—but not, it is to be feared, after logical processes, when by common consent it was concluded to permit these sciences to be taught by the same faculty. This obtaining as a relic of the past, and the demands of the present higher civilization being urgent, it is not a wonder that a great necessity intrudes upon the thinking brain of each profession. Both the faculty of dentistry and of medicine must now devote serious thought to the truth set forth in the words of the old song—

Could a man be secure  
That his days would endure,  
As of old, for a thousand long years,  
What things might he know!  
What deeds might he do!—  
And all without hurry and cares—

and must consider whether respectively there are now being taught in the system of education leading to the degrees of D.D.S. and M.D. those phases of the fundamentals which, when considered from the standpoint of the principles just briefly mentioned, are essential to each. Is there a professorship of anatomy as applied to dentistry, in contradistinction to anatomy as anatomy? Are the chairs of physiology, chemistry, and pathology occupied by professors whose function it should be to teach these as applied to dentistry? And indeed, may it not be asked whether, in the specific interpretation of the term "applied," there are professors in the medical course discharging such function?

The evolution of the professions, as I will now denominate them, of dentistry and medicine has been greatly retarded by an ever-present pathogenic microbe which not only has been, but is, persistently opposed to the establishment of right procedure, and thereby obstructing progress. It also supplies much information regarding the prevailing evil attached to the work in the fundamentals, whether pursued in art, biology, dentistry, pharmacy, veterinary medicine, or medicine. The evil is, "fundamentals taught by the same faculty"; the pathogenic microbe is, *unprincipled commercialism*. And it is surprising how the toxin of this monstrous microbe renders thought homogeneous in those whose actions are co-ordinated for the purposes of self-interest rather than for the loyal devotion of talent to the greatest interests of professional development and its associated highest good and the welfare of man.



Let the remark be here intruded that, because of the relationship of profession to laity, there is a responsibility forming, having a newer value-significance than has before existed; it attaches to our functions,—a factor of legal character which now must be considered by those empowered with the right to grant the privileges for practice.

Marshall O. Leighton, in the *Popular Science Monthly* for June, 1902, contributes an article that should be studied by everybody, entitled "The Commercial Value of Human Life." Time only permits of reference to some of his logically deduced conclusions, and as the principles involved are identical for our purposes, these will be cited: "(1) The pecuniary value of life is subject to the same economic laws as are applied to the more vulgar commodities. (2) In courts of law, the measure of an individual's productiveness, which is the measure of his value, receives the most careful scrutiny; therefore the decisions of such courts, where existing statutes permit, are trustworthy in determining an individual's value to his family. (3) The pecuniary value of a life to its relatives represents its pecuniary value to society. (4) Damages given for wrongful death are such that they can be represented by an average in different age groups with only narrow limits of probable error." Are not these features of man's general relationship indissolubly associated with conditions connected with the education and usefulness of the professions we represent? In other words, is there not, in every sense, a commercial value attaching to the dentist and physician as important in the granted right to indulge the application of the principles of these professions,—their art,—and as valuable for the preservation of health or the maintenance of that "sound body, sound mind" of the aphorism, which constitutes the foundation for all achievement, and *d demands the establishment of a rational curriculum?*

Can it be denied that the demands of modern development for a degree of proficiency and skill on the part of the dentist and physician, far transcending that of the very recent past, find the systems of professional education utterly inadequate to meet the emergency, for truly emergency it is! It must certainly be acknowledged that dental and medical education *had not* fulfilled its requirements. Proof of this assertion is afforded by the existence of law governing their practice. That law became necessary because the degrees of D.D.S. and M.D. did *not* represent that qualification, in either general or professional competency, which vouchsafed to the laity immunity from the fearful consequences of practitioners being utterly unable and unfit to assume those weighty responsibilities, and it was only after years of flagrant incompetency that the suffering public arose to the occasion and demanded protection from the dangers following the reign of ignorant and unfit doctors, through legislative control,—not, unfortunately, the control of imperfect education, but of practice. It is thus seen how, until the era of legislation for practice, professional education was not only faulty and defective, but flagrantly inadequate. The laws as they exist to-day, please observe, are only corrective, and that indirectly,

in part, and while their impartial administration has therefore greatly benefited the general conditions, it is because of commercialism that they are not complete. In no one aspect has the power of obstructive commercialism been more in evidence than by those colleges that exerted herculean effort to defeat the adoption of such laws as would require of students first, an *adequate preliminary education*, and secondly, that professional training without which the graduation of finished or competent practitioners is an *impossibility*. That the enforcement of such laws would necessarily reduce the army of students which crowd the halls of the vast number of not-needed and superfluous colleges, so called, of dentistry and medicine, is apparent to everybody. And what a reduction from the income of the diploma mill this would determine, needs no effort at demonstration.

What, it may be asked, has this to do with the consideration of our theme? Please recall that the fundamentals *in name* constitute topics for study in art, botany, agriculture, pharmacy, dentistry, veterinary medicine, biology, and medicine. Do not forget either that certificates, degrees, and diplomas in each and all of these pursuits were obtained, not by merit, but after examinations peculiarly technical, and, still more strangely, easily passed. It requires but little exercise of rational thought to thoroughly comprehend the ease with which institutions *assumed* the right to substitute the work done in the fundamentals in one career that were common *in name* with those of any other, and how very readily the reprehensible practice became established of granting advanced standing to any in the above, if a certificate, degree, or diploma was desired by the student for any two or more in any one, and recognizing the practicability of obtaining the doctorate by the then presenting short-cut process.

Sedulously hiding the truth that for each of the callings enumerated there naturally exists, as a characteristic of the fundamentals, phases so special in nature as to constitute an almost different science, the *commercial* professor exerted every influence possible to delude the laity and profession into believing that the study of the fundamentals, whether pursued in high schools or academies, courses in biology and what not, or in general or technical colleges, constituted one and the same thing, and thus it was that students in these pursuits, and especially in pharmacy, dentistry, and medicine, were found in large numbers as the victims of a commercial scheme which granted diplomas, it is true, and launched them forth not only to the injury of fellow men, but to failure in life. In our state, when the impartial administration of the law governing medical practice was first attempted, a controversy that assumed apparently formidable import took shape in an effort instituted by the *commercial scientist* to oppose the effect that would follow what must undeniably be admitted to be the correct interpretation of the medical law. That interpretation resulted in requiring, as the law exacts, four full years of the study of medicine before the diploma and the right to examination for licensure could be granted. Diplomas granted after the assumed right of granting advanced



standing to students of pharmacy, dentistry, and biology, because of the fundamentals common,—common *in name*, let it be again emphasized,—to these and medicine were not a legal credential, and the consequent “short-cut to the degree of M.D.” candidate found himself the victim of commercialism, and not eligible for examination. This situation the commercial medical college found to be a serious blow to its money interests, and promptly entered a protest to the administration of our commonwealth against the specifically medical interpretation and administration of our medical law. It required, however, but little effort to demonstrate that in anatomy the student of art mastered a phase totally different from that required by the physician. That phase of the science of anatomy studied in a course of biology, and including even the dissection of a dog or a cat, constitute such study as would not warrant its substitution for work legitimately to be exacted of students of medicine during their first year’s work.

If chemistry, as studied in the curriculum of science, or especially as studied by the pharmacist, or by whomsoever, were an excuse given by the commercial college for granting advanced standing, it was easy of demonstration that, as in anatomy, the assumption to do so was an infraction of the law, to mention nothing of its being false to the discharge of professional duty! Time need not be consumed in indicating the similarity attaching to the sciences of physiology and pathology; this portion of our subject can be dismissed by stating that the sophism, when advanced as a means of securing reversal of decision of what constituted the correct interpretation and administration of the law governing practice, not only failed, but served the unexpected purpose of proving that the study of the fundamentals in any one of the callings which constituted the “short-circuiting” to the degrees in question, was a process as distinctively special as is the practice characterizing each. To the credit of the administration of this great commonwealth, be it thundered far and wide that principle and not commercialism determined action, and that to-day every medical college must exact four full years of medical study before the degree can be legally granted, if that degree is to be legally recognized.

Giving due credit to the moral convictions of those who so bitterly opposed the impartial administration of medical law, the temptation to quote answers from one or two of *many* similarly accomplished candidates for licensure whose diplomas bear the signatures of the faculties of regularly incorporated medical colleges, cannot be resisted, as it sheds light either upon the incompetency, want of principle, or seriously defective system of granting the degree, and may explain the attitude of some of those *honored* teachers who were active in the contention mentioned.

To the question, “Name the varieties of blood that circulate in the liver, state their sources, and give the functions and destinations of each?” the following answer is given: “The portal vein carries venous blood which has lost or lacks oxygen. The portal vein, which is made up of all the *arteries* in the abdomen except the renal, and containing the nutritious elements absorbed from the



different organs, finally, by anastomosis with the *hepatic artery*, enters into the arterial system. The hepatic artery carries the arterial blood containing oxygen. The hepatic artery arises from the abdominal aorta and its function is to nourish that gland."

Another: "Describe the pathologic process characteristic of primary so-called hepatic cirrhosis, and explain why the area involved determines the different types." *Ans.* "The process moves slowly; loss of function of the hepatic cells; gland gradually becomes hard and enlarged; hypertrophy of gland at distant point from the disease; circulation cut off from the cells involved. The types may be determined by symptoms if there is lack of bile, or *bile duct* may be obliterated. By obstruction of hepatic artery or portal vein you can determine the different types of this disease."

Third: "Name the end-products resulting from the digestion of the three principal types of food, and explain how and through what channels they enter the circulation." *Ans.* "The three varieties of food are *peptones*, *sugar*, *chyme*, are taken up by the portal arteries and enter the liver and circulated."

Fourth: "Describe the *bacillus typhosus*, and state (a) whether aerobic or anaerobic, (b) saprophytic or parasitic, (c) facultative, strict or obligatory, (d) the manner of its action, (e) where found in the body and how eliminated." *Ans.* "The typhoid bacillus is *spiral* in shape, of *an inch in length*; grows very rapidly in albumens; aerobic, parasitic, and obligatory; produces inflammation in the intestines by the kidney and bowels."

These are graduates in medicine!

In dentistry, as in medicine, one law must be faced. Cause and effect is as unalterable and unavoidable as any known fact, and by tracing effect back to cause, much of knowledge will be acquired, because the "relative value of knowledge" has *not* received due consideration in establishing prevailing methods of teaching these so-called fundamentals; and, as the principle is the same for each, pardon reference to the medical, as it is the side with which the writer is familiar.

Examination for licensure, as determined by the act of Assembly prevailing in almost every state of the Union, possesses a feature, associated with the fundamentals, that clearly demonstrates the glaring defect characterizing the conventionally established method of their study and teaching. The examination questions naturally partake of the character of their teaching, and the effect of this type of examination demonstrates that which demands immediate correction. The defect consists in this: The fundamentals are studied and taught as merely abstract sciences that are dead. Their *use* is ignored! What they comprise as of constant need to the practitioner has not even been classified and set aside, much less has a well-founded system for instruction in their art been so much as formulated. Their applied phases are not even recognized as the essential feature. Hence it is that the fundamentals are practically presented in one phase only, and are *useless* to the dentist, physician, artist, agriculturist, etc., as the practical functions of

each respectively do *not* depend upon the knowledge of these as merely general, abstract, and non-applied sciences. Be it especially observed that, for any one of the callings enumerated, *as the fundamentals are taught* they are of very little use at all. State examinations include candidates who are "recent graduates" as well as the "old practitioner." Abstract descriptive fundamentals permit only of recording from memory such dry non-applied and dead facts as questions of a like abstract type may ask. The recent graduate *may* remember many details of systematic or descriptive anatomy, etc., but the old and skilled practitioner will not.

And chemistry: What can we, as dentists or physicians, say of it? Is chemistry as applied to dentistry taught by a medical faculty? Indeed, is chemistry, as used every day by the practitioner of medicine, taught in the medical college? Still worse, is not chemistry as chemistry better taught in almost any high school or college course than in the dental and the medical college? As taught by the latter, it should be required for matriculation examination, and the curriculum should include only chemistry as applied to dentistry. The same is true of the medical curriculum.

The hardships which this feature of examination in the fundamentals has precipitated, not only upon the old practitioner, but also upon the recent graduate, has resulted, moreover, not in what it logically should, viz, reform in study and teaching, but in a decidedly backward step. This consists in the adoption of the so-called divided examination. Thus, as in New York state, for example, the privilege is now accorded of "coming up" for examination in the fundamentals at the end of the second year, because, as it evidently is most thoughtlessly conceded, at the end of the four years these *fundamentals* will have been forgotten! If this is to be admitted by our two great professions as a fact characterizing the system of education, why not, to a man, move a step farther and demand that, as the fundamentals are to be forgotten, they should be dispensed with altogether!

Now as to what things should be taught, and the manner of their teaching in one profession: The recent graduate is dangerously near the failure point, because of having forgotten, for now obvious reasons, what, earlier in his career, was memorized of the fundamentals, while the practitioner almost certainly must fail. Suppose the reverse were instituted, and questions pertaining exclusively to the applied phases of the fundamentals were asked, would not the skilled old practitioner as certainly receive licensure as would *not* the recent graduate? *Why* is now apparent and needs no further comment. The duty calling for active co-operation by everyone having at heart the true interests of his profession is, to learn what of these fundamentals is needing special development for the progressive and learned dentist and physician; next, how most effectively that phase should be studied and taught; and then to demand for graduation, mastery of those phases of applied anatomy, chemistry, physiology, and pathology which every practitioner of dentistry or medicine must daily utilize in the discharge of duty, when treating every patient.

When the fundamentals have been crystallized, so to speak, in conformity with environment, the subject-matter, methods of study, teaching, and cultivation of the art of applying embodied principles will constitute a task requiring for its fulfillment intellect or scholarly attainment inferior to none.

Dentistry has developed into a profession so dignified, learned, and important to the welfare and economic interests of man, that no longer can its principles, and special phases of the fundamentals common to it and medicine *in name only*, be taught by any faculty having to do with education in some *different sphere*. Those entering its gates will find every moment of their lives, as well as every component element of their ability, sorely taxed in the acquisition of the knowledge of its principles, and most certainly in the cultivation of its now demanded high type of art. To-day, no competent physician could presume to practice dentistry, and the contrary is equally true. The functions of each are so distinctively individual that those engaging in either, whether as student, teacher, or practitioner, can profitably bear in mind one other thought uttered by Spencer: "But we that have but span-long lives" must ever bear in mind our limited time for acquisition. And remembering how narrowly this time is limited, not only by the shortness of life, but also still more by the business of life, we ought to be especially solicitous to employ what time we have to the greatest advantage. Before devoting years to some subject which fashion or fancy suggests, it is surely wise to weigh with great care the worth of results as compared with the worth of various alternative results which the same years might bring if otherwise applied.

In education, then, this is the question of questions, which it is high time we discussed in some methodic way. Before there can be a rational curriculum, we must settle which things it most concerns us to know; or, to repeat the words of Bacon, "the relative values of knowledges." The life-work of the dentist is now so thoroughly established, and differs so essentially in almost every detail from that of the physician, both being based entirely upon the education of each for each, that to-day finds us in an attitude totally different from that of ten years ago. No longer will the fundamentals as then taught, which enabled mutually advantageous commercial deals to be made with each by each, to the detriment of both, be practicable. The day has dawned, and its sun will never set, when the requirements of the dentist and the physician demand, in an especial sense, *a mastery of the applied phases of the fundamentals as they are peculiar to each!* The necessity is, which demands for the great profession of dentistry a faculty worthy and commensurate in scholarly and scientific attainment with its dignity and importance. The newly inaugurated era must have a rational curriculum for each profession! It cannot be administered by the same faculty common to each, but only by one faculty, the same for each. May the day be not far distant when commercialism will have been forever eliminated, and that realization of the truth, necessary for the proper administration of the educational system essential for both, will find sturdy companions for the cause, actuated by the



strong conviction that proper progress in the evolution of the respective professions of dentistry and medicine is largely founded upon proper methods underlying their education! Then, and only then, will the two professions achieve their high duty, and vouchsafe to fellow man their highest possible good.

---

## ORAL HYGIENE.

BY L. ASHLEY FAUGHT, D.D.S., PHILADELPHIA, PA.

(Read at the union meeting of the Maryland State Dental Association and the District of Columbia Dental Society, June 6, 1902.)

IN justice to myself, I wish to say that the paper which I am about to read has been prepared rather too rapidly to be a finished product; however, bowing to the restrictions of exceedingly limited time, I have, in widely separated moments, put together a few thoughts which it is my sincere hope may not prove too desultory to be of interest. It is not possible for me at this time to deal as broadly with the subject as I had intended in giving to your committee the title, but rather to consider a single phase,—*clean teeth*. I do not presume to come before you to teach you anything new in this direction, but simply to again record a long-cherished belief that clean teeth mean tooth-salvation.

Nearly fifteen years ago it was my lot to read a paper on "Oral Hygiene" before the Pennsylvania State Dental Society. The principal object of that paper was to direct attention to a conclusion which I had reached, that the preservation of the teeth from the ravages of dental caries lay in the care and attention given to them daily by the individual possessor of the teeth in question.

Two creeds at that time were before the profession, viz., "Failure in operations is mainly due to defective manipulation," and "Failure in operations is mainly due to incompatibility of filling material with tooth-bone." So that, in concluding my remarks, I then enunciated a third creed, viz., "Failure in operations and tooth-loss are mainly due to the lack of oral hygiene."

The lapse of time has produced nothing to shake my convictions expressed in this most important statement,—the third creed,—then spoken for the first time to the profession; but the added years of observation and service have in every way more firmly impressed its truth upon my mind. It is the keynote of tooth-salvation.

I have noted with pleasure that prominent members of the profession have since, from time to time, expressed similar beliefs; and the added weight of their personal testimony has steadily increased, until the opening years of this twentieth century find marked attention given in our dental literature to cleaning teeth.

For fifteen years prior to my formulation in 1887 of the third and new creed, almost nothing touching this subject had been published. Perhaps the most important reference, and almost the first, was made by Dr. George A. Mills, in 1879. He said, "The value of a decided polished surface of the tooth becomes very apparent

to those who have had the operation performed; the facility with which such teeth can be kept clean is evident; and although this condition may have been secured at considerable expense, yet it is an investment that will pay a good rate of interest. I do not think many dentists have much idea of the beautiful polish that a human tooth will take. Many teeth are capable of a great improvement in this direction which are now a decided detriment to what might otherwise be a pleasing face. We know that the general idea among the people is, that interfering with the surfaces of the teeth destroys the enamel, but we also know that this is a popular error."

Since 1887 it has come to be more appreciated that one of the great causes of decay in the teeth is lack of cleanliness, and that decay begins at the outer surface of the tooth, most frequently at the points most difficult to keep clean.

Very few mouths exist with the ideal arrangement of well-aligned teeth; we more often find them bunched together in irregular arrangement, with undesirable crevices and spaces favorable to the retention of particles of food. These particles unremoved are inimical to tooth tissue, for they decompose, forming compounds exceedingly detrimental, and, hidden away in these out-of-the-way spaces, they are rarely disturbed in the ordinary cleansing of the mouth. The overcoming of this undesirable state demands two conditions,—active use of the teeth and scrupulous cleanliness. The foundations for both these desirable conditions are to be laid by the dentist. The teeth are to be put into such complete order that they can be used without pain and discomfort, and so cleaned and polished that the efforts of the patient thereafter toward cleanliness may be most effective. Once put into such a state, instruction should be given for the thorough and proper use of the brush and dentifrice, to be followed by antiseptics and antacids.

But here, gentlemen, is just where the difficulty arises. It has been my experience to find that patients are not alive to the occasion. They do not seem to fully appreciate that eternal vigilance is the price of good teeth. A spasmodic effort is made, but seldom as thorough, as frequent, or as diligent as should be. I always instruct to brush the teeth, on the buccal and lingual surfaces, with a rotary motion from the gums toward the teeth; not with a rotation in that direction and then in its reverse, but with a movement which shall be peculiarly always in that one direction only; giving particular attention to the inside of the lower arch, remembering that the more difficult this cleaning is to accomplish, the more important it is that it should be done. Great care is to be taken to reach all the surfaces of the teeth situated well back in the mouth. Then the teeth are to be brushed back and forth on the masticating surfaces. From time to time during the brushing, the mouth is to be rinsed with an antiseptic solution to wash away the dislodged particles, and floss silk is to be judiciously used. To so brush the teeth will take from ten to fifteen minutes; it cannot be properly done hastily. After this brushing the use of the antacid is recommended,—not a momentary application, but one definite and prolonged; the patient should take a mouthful of the antacid and retain

it in the mouth. In the morning and at night this can be done while performing some other portion of the toilet; and while it is being so held, the material is to be forced about with the tongue and muscles of the cheek. This process is to be repeated several times.

Such is my requirement at the hands of the patient, and such home treatment they should gladly give; but alas! few are enough in earnest about the preservation of their own teeth to do this as it should be done, and yet upon so simple a process depends in large measure tooth-health and tooth-salvation. I would that some way could be found to brand this fact upon the minds of the careless ones so that it should never be forgotten.

One of the cleanest mouths I ever saw was that of a young man one year after his mouth had been placed by me in perfect condition. His teeth had suffered greatly in early life from neglect on his own part combined with inadequate dental service. I placed the mouth with much pains in good condition, and necessarily required a large fee in return,—gave him instructions and dismissed him. A year later his mouth was as I have stated,—clean, with no recurrence of decay at all. I expressed my appreciation; when he said, "Well, doctor, I guess it is due to that bill which I paid you. I determined not to have another like it, and I have faithfully carried out the instructions which you gave me." Perhaps if all our patients earned their own money by real hard work, as in this case, and then paid their own individual costs for dental services, our results would be better. It would certainly deepen their interest. However, what this patient accomplished can be done by many more, if they would only do as he did,—be faithful to themselves.

It has been of late suggested that the patient be required to return frequently, and at very near intervals, to the dentist for a repetition of the cleaning and polishing process. Undoubted testimony has been offered of the immense benefits of such proceeding, to say nothing of the stimulating effect of mere surveillance. I have, however, except in few instances, been unable to induce patients to incur this trouble and expense. From the great majority a return in from three to four months is all that can be obtained.

Clearly the work of the patient is oral hygiene,—the maintenance of the oral cavity in a state of health. The work of the dentist is dental prophylaxis,—the placing of the teeth in condition to prevent disease, a state favorable to oral hygiene. Thus it appears from any strict definition of the two words that the end to be obtained by either dentist or patient is one and the same,—prevention of disease, maintenance of health.

What is our duty in the premises, and how can we best accomplish it? Make a thorough examination in every case presenting. It is too often my lot to examine mouths supposed to be in perfect order, only to find much that needs attention. I cannot but believe that the work of examination is too often not thoroughly done by dentists, either through carelessness or from the closing of the eyes to existing conditions for fear of increasing the expense to the patients beyond their supposed ability or willingness to render compensating fees. Much better is it to go over the mouths care-



fully, with every professional sense alert, and find out exactly what is needed and honestly advise the patient. Then do it, and do it to the very best of your ability; find the crevices in the out-of-the-way places, and properly fill them; smooth down all roughened surfaces either of teeth or of fillings, particularly at the crevices and most particularly between the teeth; get out the excess of cement under the gum where crowns have been carelessly placed; trim down protruding gutta-percha fillings, and then give the teeth a thorough scaling, cleaning, and polishing.

All this will take time and will necessarily be an expense to the patient. It will not infrequently absorb three or four sittings, and as many hours of real hard work, but it is the best service given to any patient. It comes, as Dr. Mills has said, "at considerable expense, but it pays." The changed conditions of the mouth are of immense benefit, and just in proportion as our patients return to us frequently, regularly, and at somewhat short intervals, having done their own part well, will each repetition of such service be quickly accomplished.

As to my own methods, I use power polishers, hand portepolishers, and fine tapes. For scalers, varying forms,—indeed, anything which will get at and remove the deposits; frequently, and always in the finishing treatment, are used the scalers which I now pass around. They are adapted points of my own.

Thus should we treat, and thus should our patients treat themselves, until a clean mouth be attained, the environment be changed, and dental prophylaxis and oral hygiene become accomplished facts.

---

## CEMENTS.

BY W. V-B. AMES, D.D.S., CHICAGO, ILL.

(Read before the New York State Dental Society at Albany, May 14, 1902.)

THE chronology of the utilization of cements in dental practice will not be included in my presentation of the cement subject, neither shall I go to any extent into the literature pertaining thereto. Works on general chemistry furnish almost nothing bearing directly upon the composition and application of such cements as oxychlorids and oxyphosphates, and dental chemistries give rather briefly only some stereotyped information of no value to one attempting a serious study of this subject. Flagg's "Plastics" has some statements which cannot be overlooked, and the paper of Dr. J. E. Hinkins and Prof. S. F. Acree before the Third International Dental Congress\* is of such scope as to be either valuable or misleading. Dr. Flagg has much to say of the usefulness and uselessness of both oxychlorids and oxyphosphates, and regarding the latter makes a radical distinction between what he calls an oxyphosphate of zinc cement made from ordinary zinc oxid and phosphoric acid, and zinc phosphate cement made from nitrated zinc oxid and phosphoric acid. My only comment on this

---

\*See DENTAL COSMOS for June, 1901, p. 581.

distinction will be that I do not think that any chemical analogy can be brought forth which would support such a distinction, and as, outside of dental college chemical laboratories, ordinary zinc oxid is not used at present for cement-making, there cannot be much need of the distinction.

This term, "zinc phosphate cement," however, leads up to the point of the paper of Dr. Hinkins and S. F. Acree, of which I wish to have most to say;—after, however, first expressing my appreciation of that part of their paper which gives the results of the action on cement masses of the acids produced within the oral cavity. This part of their work I hope to see carried farther.

They say, in the part of their paper devoted to the chemistry of cements, "The term 'oxyphosphate of zinc' is a misnomer. Upon looking through the chemical literature we find no such substance described."

Now, if this failure to find a description in chemical literature were a sufficient reason to brand the term a "misnomer" from a chemical standpoint, I would say that we were still justified in using the term from a physical point of view, if, as Mr. Acree seems to contend, the zinc oxid is held in mass by zinc phosphate (supposedly the normal phosphate). But is a writer justified in branding a term a misnomer because of inability to find the compound to which it applies described in chemical literature? I think not. I will venture the statement that if chemical literature covered and included all information of value acquired by workers in *applied* chemistry, the volume of said literature would be doubled.

From our standpoint as users of what we will still call zinc oxyphosphate we will assume that normal zinc phosphate,  $\text{Zn}_3(\text{PO}_4)_2$ , is of interest chemically. In searching all available authors we find in two instances very brief mention of *zinc phosphate*. Bloxam says: "Zinc phosphate forms the mineral Hopeite,  $\text{Zn}_3(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}$ ," and Prescott and Johnson, in enumerating the precipitates of different metallic salts by an alkaline phosphate, say: "With zinc salts the precipitate is dimetallic,  $\text{ZnHPO}_4$ , or normal,  $\text{Zn}_3(\text{PO}_4)_2$ ." Thorpe ("Dictionary of Applied Chemistry"), Watts ("Dictionary of Chemistry"), Comey ("Dictionary of Chemical Solubilities"), Remsen, Roscoe and Schorlemmer, Dammer, Adolphe Wurtz, Mendelejeff, and Miller ("Inorganic Chemistry") have been searched in vain for reference to the compound "phosphate of zinc." Now, if among these recognized authors the normal zinc phosphate was entitled to so little consideration, is there any justification in claiming the term "zinc oxyphosphate" as a misnomer, when the only use of the compound has been as a dental cement, and that for little more than twenty years? Zinc phosphid, long used in medicine, gets a full mention by all authors. Zinc oxychlorid, used at a much earlier date in dentistry, and along with magnesium oxychlorid in the building arts, comes in for but slight recognition in chemical literature. An oxychlorid is looked upon as a basic chlorid. I will end this rather too extended theoretical consideration of the subject by merely venturing that, in the course of time, the cement-making phenomena manifested when zinc oxid in

excess is intermixed with a phosphoric acid solution will be recognized in chemical literature as nothing more nor less than the formation of basic or subphosphate of zinc, holding in mass the excess of oxid, and will be called "oxyphosphate."

With nearly all references to basic or sub salts there is an uncertainty expressed by the analyst as to their exact composition, it being often surmised that the basic salt as found or obtained in analyses can be basic in degree, *i.e.* there are usually several basic salts intermingled with the normal. Zinc oxychlorid, according to different investigators, seems to exist in several degrees. (Coiney, "Dict. of Chemical Solubilities" gives five Zn oxychl.)

The most reasonable supposition seems to be that in both zinc oxychlorid and zinc oxyphosphate the material agglutinating the zinc oxid granules is a basic salt containing water of crystallization, and that this basic salt is of variable composition, depending not only on the particular nature of the ingredients, but upon the manner of mixing the cement. It will no doubt be some years before the true nature of these compounds is arrived at with any degree of definiteness. When this point has been cleared up, I believe that we will be in position to formulate quite definite rules for the mixing, treatment, and using of these cements. The chemistry of the cement question is far from having been settled for all time,—although said to have been disposed of by some recent writings.

The physical and qualitative chemical conditions of cements of which I am in position to speak must be referred to tersely, for the sake of brevity and because I have already given in other papers nearly all that I am able to give to-day.

There has been mention of the difference between cements in which the phosphoric acid is modified by alkaline phosphates soluble in saliva (glacial phosphoric acid), and those in which the phosphoric acid is modified by non-alkaline phosphates insoluble in saliva, the first class giving a porous, friable mass, not hydraulic, the second giving a non-porous, vitreous mass, in some cases hydraulic to a high degree. This possible hydraulic feature must be considered of the utmost importance.

The trend of improvement is to-day, I believe, in the direction of the production of cements which are hydraulic to a marked degree, without sacrificing other desirable qualities. In a paper before the National Association, in 1899, attention was called to the fact that these porous cements show no shrinkage or expansion (no change at periphery) in either the wet or dry state, because there is shrinkage toward an infinite number of centers, and that in the non-porous variety there is a shrinkage toward one center in a dry state, and an expansion by the taking up of water of crystallization in a moist state, so that there is a decided argument in favor of cements which are really hydraulic, as then nearly the entire hardening process may take place with the mass under moisture. The time has come and passed for the abandonment of the idea that cement fillings are better for being kept dry for an indefinite time.

In the same paper the comparative strength of cements from coarse, medium fine, and impalpable powders was noted as increas-



ing up to a point nearly approaching impalpability, and then dropping off as that condition seemed to be reached.

The fineness or coarseness of a given powder decides or fixes the rapidity of setting. A given powder in a coarse state with a given phosphoric acid solution will be slow of setting, and the same powder reduced to a finer state will give quicker setting just in proportion to the fineness of division, for the simple reason that in the fine state there is more surface of oxid granule exposed to the action of the acid. A difference of fineness of powder most often accounts for differences in the behavior of packages of cement supposed to be identical.

In that paper also, as well as in one published in the *Items of Interest* for February, 1900, the arsenical contamination of cement powders was described in such a way as would enable a fair-minded man to conclude that the infinitesimal trace of arsenic contained existed as zinc arsenite, and then if he will endeavor to destroy pulps by the application of zinc arsenite, or take my word for it that various teeth have remained comfortably *in situ* for more than three years with a considerable quantity of zinc arsenite inclosed beneath fillings, it seems that the arsenical contamination of cements ought to be forever dismissed as a factor in the question of "Why do pulps sometimes die under cement fillings?"

According to most comments on phosphate cements, the opinion seems to prevail that the integrity of the mass depends almost wholly on the cement-making property of zinc oxid, the calcium-aluminum-silicon combinations being left out of the consideration at present. It is generally believed that the addition of any other oxid or wholly insoluble material is merely for the purpose of pigmenting or helping the mass to better withstand attrition.

In the past thirteen years I have from time to time found various instances of metallic oxids, other than zinc, either giving a cement when mixed with phosphoric acid, or modifying very beneficially the behavior of the zinc oxid and phosphoric acid. Oxids that may be mentioned which themselves can make cements with phosphoric acid, are copper (cupric and cuprous), iron, mercury, gold, silver, and a compound aluminum-cobalt oxid (cobalt blue). Any or all of these can be blended with zinc oxid for pigmenting or for modifying the working qualities of zinc phosphate cements. Calcium oxid, the use of which, along with alumina and silica, antedates all other oxids as a phosphate cement-maker in chemical knowledge, acts very violently with phosphoric acid, and naturally hastens the setting of a zinc phosphate cement to such a degree that its use for whitening such a cement is out of the question, and oxids of aluminum and silicon act only as foreign substances, to the detriment of the result, according to my observations.

Thus, any beneficial combination must have a darker color than the straight basic zinc oxid. In using phosphate cements I have become more and more convinced that as much benefit is derived by making combinations which give mixed shades of gray, brown, blue, and green, as can be gotten by blending with basic zinc oxid the cement-making oxids mentioned.

As a result of ascertaining these cement-making properties of the more or less dark-colored oxids, I have derived much benefit in my practice from the use of cements made by incorporating plain cupric oxid with phosphoric acid, or, as conditions sometimes indicate, a combination of cupric oxid and other of the metallic oxids mentioned. Such cements have come to be known as "oxyphosphate of copper" in the simple form, and "new process oxyphosphate of copper" in the compound form.

Committees have been appointed to make tests and experiments with these new combinations. Efforts were made to get the committees together to-day.

We find, as peculiar to the materials and as differing from zinc oxid cements, for instance, that the maximum density is obtained from a creamy mix rather than from a stiff or putty-like mix, as is the case with the zinc oxyphosphate. With these cements there is obtained a decided embalming effect of semi-decalcified dentin and of thoroughly decalcified dentin, which is peculiar to copper salts.

These materials are extremely bland when used near the pulp or in contact with gum tissue, and seem to have a very salutary effect upon inflamed pulp or gum tissue. A large buccal cavity, for instance, into which the gum has overlapped and become angry and ragged,—the gum will shrink away, and take on a condition where it is rather difficult to start a hemorrhage. You really have to lacerate the tissue before there will be a flow of blood, and the effect of the contact with gum tissue is such that in a multi-rooted tooth, where there has been extreme recession of the gum, and a pocket at the bifurcation of the roots, this space can be literally filled with the straight "Original" oxyphosphate of copper and cause a shrinking of the tissue, and also the correction of the tendency to suppuration, to such an extent that the tissue becomes healthy and suppuration ceases. Many cases of active pyorrhea have been cured by this simple method. The material has the property of taking up a slight trace of moisture which may be present, and will adhere to a plain surface after being made only reasonably dry, doing away with the necessity of undercuts entirely. It is especially useful for filling the open fissures of newly erupted permanent teeth,—that is, first, second, or third molars, which can be done with very little preparation, and is a most useful material for filling cavities in deciduous teeth because of its embalming properties and because a trace of moisture will not interfere with its adhesion. The setting process is so rapid when it is properly mixed that submersion soon after insertion does no damage.

Many other uses might be mentioned,—so many that to me and to others it has seemed that if it were not for the color of these materials, there would be little excuse for any other cements.

This paper will not be complete without some consideration of zinc oxychlorid. A practical oxychlorid may be simply a nearly saturated solution of zinc chlorid and a good basic zinc oxid, but nearly all preparations of this kind available are compounded for quicker setting than such a formula would give.

A straight zinc oxychlorid is rather too slow in its setting to at first appeal to the manipulator, but when the utility of such a compound is noted in comparison with any modified zinc oxychlorid known to me in which the modification consists of the addition of other oxids calculated to hasten the setting, the superiority of the straight zinc oxychlorid leads one to compromise in the matter, and be satisfied to cover a pulp-capping or cavity lining for a day or more, when a satisfactory density has been attained. The modification of this material for quick setting usually consists of the addition of calcium oxid. After having had experience previous to the general use of oxyphosphates with the oxychlorids of commerce, all of which known to me were modified for quick setting, and more recently with straight zinc oxychlorid, I am quite positive that much or all of the tendency to fail at the cervical margin was attributable to the modifying ingredients, so that after seeing disastrous failures from my early use of oxychlorids, I feel that I might now safely fill approximal cavities reaching the gum line with a straight zinc oxychlorid, if there were not other cements more reliable for withstanding *mechanical* destructive influences. I will wander from my subject to the extent of saying that for cavity lining I consider it the cement *par excellence*.

There has been much energy expended upon attempts to utilize the cement-making phenomena developed when phosphoric acid solutions and calcium-aluminum-silicon combinations are intermixed. About 1895, a preparation called "Dentos" was vaunted by a leading manufacturing house as the long-looked-for, indestructible plastic filling material. My personal experience with it was disastrous, as was the experience of all others apparently, since the material very soon passed into obscurity. Fillings were made of this preparation which withstood the oral secretions and attrition admirably, only to be failures from decay all about the mass, because of shrinkage, not perceptible till made evident by decay of the cavity wall.

More recently a similar preparation has been much vaunted as the millennium-maker. As it has not been possible for me to make a test filling of this preparation in the regulation size cavity in steel testing tube which would hold up within eight points of zero, even when submerged in water while hardening, and since the breaking-down of edges of fillings shows a shrinkage and absolute lack of adhesion to the cavity wall, I am obliged to say that the much-sought-for result has not been attained in this material. The power of the ultimate product of an admixture of this sort to withstand the destructive tendencies of alkaline solutions and organic acids makes investigation along that line quite fascinating. If this tendency of these products to shrink during hardening can be overcome, we will have a preparation which may possibly have some special uses, and yet, if it cannot be so compounded as to give a more dense and resistant mass than can be made from a modified zinc oxyphosphate, then there would only be left for it the filling of a few well-protected cavities for which we have already a reliable material in a properly modified gutta-percha.



## A LEGAL IDENTIFICATION.

BY E. S. ROSENBLUTH, D.D.S., BRIDGEPORT, CONN.

(Read before the Hartford, Conn., Dental Society, January 13, 1902.)

A MURDER trial hinging largely upon the expert testimony of a dentist is quite uncommon. This fact being conceded, I have been persuaded to relate my experience in connection with the trial of the midwife, Nancy A. Guilford, who was accused of murder as the result of a criminal operation which caused the death of a young woman, named Emma Gill, a resident of Southington Conn., where I was then located. I confess to a certain degree of reluctance in taking up this subject, and do so only because I have been urged, on the ground that it is of general interest to the profession.

Early in September, 1898, several dismembered portions of a female human body were found on the water front of Bridgeport, Conn., near what is known as the Yellow Mill Pond bridge. The fact that a large number of young women were then missing from their homes in this state, as well as in Massachusetts, caused many interested relatives to view the remains, as yet lying unidentified at an undertaking establishment in Bridgeport which served as a morgue.

The father of a young woman resident in a small town in Massachusetts, who came to view the body, was satisfied that it was that of his daughter; and with the assurance of his family dentist, who had not examined the teeth, but reached his conclusions from a description of them, the body was delivered to the family for burial. Upon arrival at his home the father was amazed to find that his daughter had returned alive and well. The body, therefore, was returned to the morgue in Bridgeport.

About this time it became known that a young woman, named Emma Gill, was missing from Southington, Conn. The local correspondent of the *Hartford Courant* was the first to surmise the true identity of the corpse, and upon seeing the head, which had been severed from the body, he concluded that it bore a striking resemblance to that young woman. He requested several members of her family to view the remains, which they did, with the result that the father, three brothers, and a sister confirmed him in his belief.

It being known to her parents that their daughter had been one of my patients, they so informed the chief of police of Bridgeport, who thereupon called me by telephone, requesting that I come there at once and make an examination of the mouth. Having a full appointment-book, and no curiosity whatever, I declined to do so, on the ground that professional engagements demanded all my time. I, however, sent him a chart showing the condition of the teeth of Emma Gill, so that it could be used for purposes of comparison should he desire an examination of the head by a local dentist.

An examination was at once ordered, and was made, the findings being presented at the inquest by Dr. G. C. Eighm, of Bridge-

port, whose chart, upon comparison, agreed with mine. This satisfied the authorities, and the body was surrendered to the Gill family, who removed it to Southington for burial.

It was, of course, known that a crime had been committed, but by whom was still unknown. The police authorities were at work on the case, and it was gradually developed that a midwife, Mrs. Guilford, of Bridgeport, was connected with the case, and it was further found that others had assisted her in disposing of the body. The arrests of Mrs. Guilford, her son, her daughter, and a colored maid followed. Evidence was rapidly accumulating, and a prosecution for murder in the second degree determined upon by the state's attorney of the district.

The body was then in Southington for interment. As the funeral procession was passing my office, Coroner Doten, of Bridgeport, called me by telephone and requested that I make a careful examination of the teeth; it was, however, too late and I so informed him. The following morning I received a telegram from the coroner, reiterating his request, and saying that the state would pay for the service. Detectives Arnold and Cronin, of the Bridgeport police force, called at my office soon after the receipt of this telegram relating the coroner's purpose, and we agreed upon a time to disinter the body. Upon my suggestion, the detectives secured the services of an undertaker and a sexton. They also procured a permit for the disinterment.

The head only was removed from the grave, and was conveyed to what is known as the "tool-house" of the cemetery,—a small wooden structure, containing no furniture excepting one broken chair, which was placed in the doorway to serve as a support for the head.

In the presence of the detectives, a local deputy sheriff, and others as witnesses, the examination was carefully conducted, with the knowledge that it was to be used in a court of justice for the prosecution of a criminal charge. It is, consequently, unnecessary to state that it was carefully performed, with the aid of Dr. W. G. Steadman, the health officer of the town, who noted in writing the progress of examination. I examined the mouth three times with exactly the same result.

The method employed was simple, a common cork being used to prop the jaws apart on one side, while the teeth on the other side were being examined with exploring instruments and a mouth mirror. Each filling was noted in detail, as to position, filling material used, and as nearly as possible the methods employed by the operator in finishing gold and amalgam, the condition of the fillings and discoloration of materials from various causes. The head having been in sea-water, and subsequently placed in a jar of embalming fluid, a scum covered some of the amalgam fillings, which gave them the appearance of cement, deceiving those who saw the head in the morgue at Bridgeport. Missing teeth were noted, as well as decayed roots which remained.

Upon returning to my office, I made a careful transcript of my records of work done at the various sittings of Emma Gill, also

of teeth which I had extracted for her, and found that the completed record was the same as the result of my examination of the head, excepting that my book indicated the extraction of the lower right first molar, and a later entry showed a filling in the same tooth, which was evidently contradictory, due, I felt satisfied, to a clerical error in my record. At any rate, the examination of the work found in the mouth examined revealed all the characteristic features of my methods of operating, all of which soon convinced me that the head examined at the cemetery could be none other than that of Emma Gill.

After an interval of about six months, the case was to be called in the superior court at Bridgeport, Judge George H. Wheeler presiding. Not having received any notice that I would be called upon as a witness, but believing that it could not be avoided, I wrote to the Hon. Samuel Fessenden, the state's attorney for the district, inquiring as to his intentions, and requesting that, if possible, he leave me out of the case, since my practice demanded all of my time, and that I could not well afford to appear in court for sixty cents per day, the usual witness fee. He replied, requesting me to call on him at the Superior Court Building in Bridgeport at a given time, which I did, and again reminded him of the fact that it would be decidedly unfair to claim my services, which he could do, at the ordinary witness fee. He, therefore, agreed that my bill for services should be taxed with the other costs of the case, and the next day confirmed this by letter.

When the case was called, I was summoned to appear in court at the very beginning of the trial. Thus many others, as well as myself, were required to sit quietly listening to the proceedings of organizing the jury and the testimony of other witnesses. At first it seemed like time wasted, but before much time had elapsed it dawned upon me that it was quite an advantage to grow accustomed to the surroundings, and especially to the methods employed in cross-examination by counsel for the defense. It was, of course, necessary that the prosecuting attorney establish the identity of the body, which he sought to do through the testimony of relatives and friends of the dead woman, as well as through the dental work found in the mouth.

Upon being called upon the witness stand, Mr. Fessenden at once sought to establish this fact, by bringing out the result of my examination of the mouth, with the transcript of my record-book, which was presented in detail.

There was no room for doubt in my mind in relation to the identity of the dead woman, and I so testified in the most positive terms, although I had made no effort to recognize the features.

The Hillischer method, which I have employed since 1894 in recording my work, is simple, but quite positive, consisting of an entry in an ordinary journal stating the work performed and designating the position in the mouth of teeth filled, crowned, extracted, treated or otherwise operated upon, by numbering from one to eight, and using a long, horizontal line crossed in the center. All figures above the line represent the upper teeth, and those below, the lower



teeth. The crossed line stands for the median line of the mouth. To the right of the center or crossed line represents the right side of the mouth, and to the left, the left side of the mouth.

Example:

8-7-6-5-4-3-2-1		1-2-3-4-5-6-7-8
8-7-6-5-4-3-2-1		1-2-3-4-5-6-7-8

The various surfaces of the teeth are designated by abbreviations, thus: M for mesial, D for distal, OC for occlusal, INC for incisal, AP for anterior pit, DP for distal pit, BU for buccal, LI for lingual, and so on.

Upon being turned over to the tender mercies of the defense for cross-examination, I immediately discovered that counsel for the defendant required that I qualify professionally. After giving my name and address, etc., the first technical question aimed at me was, "What is a tooth?" It came so unexpectedly that for a moment I could not give the technical definition without stopping to consider, so the best that I could do was to answer that it was of no consequence, as everybody knows what a tooth is.

The defendant's counsel, Mr. Klein, then examined me carefully in dental anatomy, the composition of various amalgam alloys, dental cements, bacteriology, and operative dentistry, in which he had probably been coached by a dental friend. He was quite creditably prepared. The differences between the crowns of the various upper and lower teeth interested him considerably.

It soon became apparent that a tooth not present in the head should be referred to, not as one extracted, but as missing.

An attempt was made to compel me to testify in relation to the location of fillings without my records before me. This I refused to do, on the ground that it was impossible to remember such details on the spur of the moment.

Having asserted that there is much individuality exhibited in the work of most operators, I was called upon to explain what there was peculiar about the work found in the severed head that I could identify as mine.

At that time I was in the habit of wafering amalgam for the finishing of such fillings, and when quite hard using a small ball burnisher, drawing it from the center to the edges, leaving no perceptible marks except upon the buccal surface, where there is little attrition to obliterate them.

There was such a filling on the buccal surface of the lower right first molar, which was the tooth involved in my clerical error, a filling recently made, with the radiating marks perceptible, which is quite unusual.

This was the cause of the following questioning:

Q. "Is there any difference in your work from the work of other dentists?"

A. "Yes. Dentists show individuality in their work."

Q. "What peculiarities had you?"

A. "The peculiarity of burnishing from the center to the edges of a filling."

Q. "If your burnisher is perfectly flat and larger than the cavity, would it be good dentistry to use it?"

A. "Yes, in some cases."

Q. "What was the size of the round burnisher that you used in this particular work?"

A. "I will not attempt to give such a measurement without the assistance of a standard gauge, but will bring it here with several others if you wish to examine it."

Q. "A flat burnisher is sometimes round, is it not?"

A. "A flat burnisher is flat."

The court here adjourned until the following Monday morning. In the meantime counsel for the defense was busily engaged in preparing several neatly laid traps, in which to entangle his witness, as will be seen later. I also was engaged in preparing an ocular demonstration for the benefit of counsel for the defense, in the shape of a series of amalgam fillings made in a tooth-brush handle, showing five or six methods of finishing such fillings.

On Monday morning I took an early train in order to present this to the state's attorney for his inspection. I also produced a handful of burnishers, including those of the small ball variety, all of which seemed to please him, and he said that he would call for them at the proper time. At 10 A.M. court convened promptly, and I was at once recalled to the witness-stand.

Counsel for the defense immediately proceeded to cross-examine me. I was now without my records to refer to, a dangerous situation to which I demurred, but the court ruled that I must answer.

Q. "Why did you cap lower right number six?"

A. "I did not."

Q. "Did you find any fillings in the lower central incisors?"

A. "No."

Q. "Are you sure of it?"

A. "Certainly, I was very careful to note exactly the condition of the mouth I examined, as well as in keeping my records."

Q. "I know that you have said that before, but you did not notice the projection of an amalgam filling, did you?"

(The state's attorney entered an objection. Not sustained.)

A. "No one has testified that such a filling projected, although one of the gold fillings appeared to have been disturbed by the point of a sharp instrument."

After several more attempts of the same nature, which met with no better success, my record-book, together with the transcript of it which had thus far been used, was admitted in evidence. It now became necessary to prove the clerical error in my record-book, which was done to the satisfaction of the court and counsel. It was also necessary to swear that these records were entered on the same day on which the work was done, which happily I could do.

Mr. Fessenden called for the ivory tooth-brush handle, which I had prepared to demonstrate the various methods of finishing amalgam fillings, and requested me to mark the one that was burnished from the center to the edges, which I did, and he then offered it as an exhibit.

Counsel for the defense both fiercely objected to its admission, but the court ruled otherwise, and it was marked for identification.

Mr. Fessenden then called for the ball burnisher in question, and after many objections this was also admitted and marked for identification. This practically ended my examination, and I was much pleased to note that the customary challenge against the admission of this line of testimony was not forthcoming.

The case proceeded from this point for about three weeks, during which much direct as well as expert medical testimony, in regard to malpractice, length of the dismembered body in life, etc., were taken, nearly all bearing heavily upon the guilt of the accused. The trial, however, came to a sudden halt, caused by the illness of one of the jurors, with little prospect for his early recovery.

After several days of waiting, the court reluctantly decided to dismiss the jury and order a new trial. The defense evidently having little hope of an acquittal, offered to plead guilty to manslaughter in the first degree, with the proviso that the cases against her children and colored maid be dropped. This compromise was accepted by the state, and the prisoner is now serving a sentence of ten years in Wethersfield prison.

---

## CORRESPONDENCE.

---

### GENERAL ANESTHESIA INDUCED BY THE APPLICATION OF A LOCAL ANESTHETIC.

TO THE EDITOR OF THE DENTAL COSMOS:

*Sir*,—The following is an account of an interesting case in which a local anesthetic produced general anesthesia:

While I was at the office of Dr. Emelin, a patient presented herself for the extraction of a lower left first molar that was abscessed, the tooth being crowned. The doctor suggested nitrous oxid to the patient, but, fearing the after-effects that she might experience, she refused to have the gas administered. As a local anesthetic, the doctor resorted to ethyl chlorid, applying it in the usual way of spraying the drug on the gum margin of the tooth until it was bleached. Immediately upon the application of the drug the patient began to groan, and continued doing so until the operation was completed. The tooth was removed from its socket, but owing to the firm attachment of the gum around the neck of the tooth, clipping was resorted to.

The patient in this case inhaled a sufficient amount of the vapor to produce general anesthesia. For not only did she suffer no pain during extraction and clipping, but was also ignorant of the fact that her jaw during the extraction received a unilateral dislocation, which was immediately set. When the patient awoke, she said, "Doctor, I asked you not to give me gas; why did you do it?" The doctor refuted her statement, and showed her the phial containing the drug; and, as a witness during the entire procedure, I was in a position to bear him out. This, too, shows that the patient was entirely unconscious of what was going on.

NATHAN L. PALINGER,  
*Student, N. Y. Coll. Dent.*



## PROCEEDINGS OF SOCIETIES.

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

(Continued from page 958.)

Dr. J. P. CORLEY, Greensboro, Ala., then read the following paper:

## POINTS IN TEACHING HYGIENE.

Oral hygiene is of such vital importance, and is so little appreciated that the oral custodian should employ every expedient that would facilitate its teaching. When I thought to write on hygiene, I meant to speak only of the technique of the dental toilet; the apparent apathy, however, in the ranks of the profession has led me to stretch my thoughts far beyond the limits of my topic. Touching upon these more fundamental principles, I merely reiterate statements which have been submitted to this body for at least fourteen years. If seeds were sown, their harvest, if any, has been reaped in private. But as this is in the nature of a reformation, and all reformations must be wrought slowly, we will continue to labor and to wait.

*The teacher.* A doctor is a teacher, but do *we* deserve this honor? If we teach nothing further than the substitution of artificial organs or the restoration of lost contour, then are we better only in degree than the mechanic who repairs a machine.

A learned profession, based upon a preliminary preparation of mind and body, builded of the materials of all past civilization, honored by the most esthetic minds and best blood of the age, fostered and fed by an appreciative public, with the happiness and well-being of mankind dependent upon its exertions and the progress and development of posterity measured by its own, cannot afford to underestimate its responsibilities or betray its trust.

Dentistry has developed along the lines of causation and restoration. The study of etiology, through which we hope for prophylaxis and immunity, is too sacred a thing for the public, and is therefore confined to the professional Talmud. Instrumental restoration, however, has caught and held the public fancy almost to the exclusion of preventive treatment. Thus we plod along, patching or pulling and substituting, satisfied in our mechanic's realm, when we might stand in nature's galleries, directing the preservation of her handiwork.

The average dentist has many of the requisites of a successful teacher,—ordinary intelligence, systematic training, daily contact with an intelligent *clientèle*, a personal and sympathetic association with a wide range of humanity, together with the fundamental requisite of a reason for the faith that in him lies.

It is true that few teeth under constant and intelligent care will decay, and that still fewer need ever be lost. Therefore the practice of oral hygiene is more prophylactic in its true analysis than any other preventive procedure.

*Auxiliaries.* In the prosecution of this educational scheme one

of the most important considerations is the engagement of allies. Otherwise our teaching must be confined to our patients, and this, you know, comes too late for the best results. An exposed pulp in the tooth of a child not yet ten years old is a sight to make the devil weep, and yet a great many initial visits to the dentist are at the instigation of a complaining tooth. It therefore behooves us to engage an influence which will reach this class before the ravages of decay have wrought such havoc. There are two sources through which we may work to this end,—the literary teacher and the practicing physician. The possibilities in this direction are unlimited, and our success will depend largely upon our development of these factors.

*The pupil.* It is remarkable that few men appreciate the physical, mechanical, or esthetic importance of the dental armature, and lamentable that they know nothing of its rational preservation. It is amazing that men will be surprised, and women angry, if you try to convince them that their mouths are unclean. We may say that the majority of patients think that neglect means only the possibility of the expense and discomfort of a dental operation. They think further, that, after a tooth has been properly filled, it will never again decay. Consequently they feel that, when they pay their bill, their whole duty has been discharged. This fallacy is due in a measure to the misrepresentations by the rank and file of the profession. We need to exercise tact in combating its baneful results and in making the patient feel the responsibility of our operation, which is intrusted to his keeping. If we succeed in doing this, we at once rise to a position from which the very acme of success is obtainable.

The first step toward enlisting the patient's co-operation is to awaken his interest. It usually requires a mental shock to do this. Many persons know that oral cleanliness is necessary from a prophylactic as well as an esthetic standpoint, but they have never come face to face with the calamity which inevitably follows neglect. There are many ways of securing this interest. Each teacher must be in a measure the author of his own methods. Different individuals require different tactics. In one case he may feign horror and disgust, in another astonishment, in another indignation; in some instances he may assume an air of austerity and demand, in another anxiety; in another he may be overcome with a sympathetic despair. In all cases he must assure the patient that his services depend upon their obedience.

I find that, as a rule, children are to be commanded, women angered, and men frightened. In any case, the patient must be so taken up that he may neither question your statements nor ask for advice. When this is accomplished, the battle is won.

The next step is detailed instruction. This must be done as master of the situation, with tact and decency, but in all frankness, concealing nothing pertaining to existing conditions. The patient should hold a hand-mirror and follow the instrument as it points out the most vulnerable surfaces and inaccessible localities. After the topography of the mouth has been carefully noted, a practical

regimen is to be prescribed and explained in detail. The details of a classical dental toilet are too familiar to this audience to require notation here, but allow me to suggest, in passing, a few auxiliaries which I have found of inestimable value. Their adoption has often turned the balance in favor of success. I simply mention them, trusting to the discussion to develop their virtues and emphasize their importance.

(1) A practical knowledge of the geography and topography of the oral cavity.

(2) The use of no aromatic dentifrices, except in rare cases, and then after the mouth has been cleansed as far as is possible by the intelligent use of a good brush, pure soap, prepared chalk, toothpicks, and an abundance of tepid water, together with massage where there is even a tendency to gingivitis.

(3) The constant and intelligent use of soft pine toothpicks.

(4) Massage where there exists the slightest gingivitis or a low state of vitality in the gum tissue.

(5) A pure tough chewing-gum containing no flavoring, especially indicated where the teeth are deeply marked or irregular, or where the teeth and gums need exercise, or where the patient is so hopelessly lazy that no power will persuade him to clean his teeth otherwise.

*Systemic hygiene.* In this age of intelligence, and with the present status of dentistry, it is a standing shame that we should not have gotten beyond mere cleanliness in the practice of hygiene, and that the dentist should be required to do the drudgery of cleaning teeth. It is true that we occasionally find a patient who appreciates the value of tooth and gum exercise, the importance of tooth-nutrition, the dental sympathy with the systemic tone, and the relation which the dental armature bears to the physical economy; but usually those subjects are thought to be either too sacred or too mysterious for the profane use of the laity (or the dentist either, for that), but are to be found only in the medical archives. Now and then, however, we have the mother before whom we can lay these mysteries, and, if the present pace in the educational scheme is maintained, the day may come when we will look more to immunity than repair.

*Organized effort.* Just at present, however, the most alarming feature of the situation is the indifference of the organized profession. True, we have taken one efficient step in the right direction, but it came through the efforts of a few enthusiastic men, and will amount to little unless supported by the rank and file of the profession. What, then, is the duty which lies before us? I would say, let us cast about for ways and means to institute some practical working plan which we could officially indorse, and then give it our moral and financial support.

Every state society should have a standing committee one duty of which would be to memorialize its own state educational and medical associations, and to insist that every medical college within its bounds should attach to its teaching corps a lecturer on oral hygiene and dental prophylaxis, and that all public and normal schools have some systematic instruction on the subject.



The question before us is a long, tedious, unending problem,—one which at present presents insurmountable difficulties, but which also offers unlimited possibilities.

*Discussion.*

Dr. CRAWFORD. Dr. Corley allowed me the privilege of looking over his paper before it was read, with a view to my discussing it later. I am very sorry that I am not feeling well this morning, and do not feel like discussing it further than to say that I enjoyed the reading of it very much, and that I think we all appreciate the importance of the subject.

Dr. W. H. WEAVER, Lagrange, Ga. Last week one of the most excellent young ladies of our town came to me and told me that she was going to be a trained nurse, and had written for admission into the Johns Hopkins University. She said they wrote her that she would not be admitted unless her mouth was in a healthy condition. This only shows that the more educated classes are giving this subject thought. The editorial referred to in this paper was caused by remarks of Dr. Crawford, and I think we are all indebted to him for his work along this line.

Dr. J. R. BEACH, Clarksville, Tenn. While I enjoyed the paper very much indeed, I do not agree with the essayist in his remarks referring to the cleansing of the teeth. It may be "drudgery," as he says, but when one presents himself for this purpose, it is certainly our duty to give careful attention to every detail of this work. Remove every particle of salivary calculus, brush the teeth well, removing all stains that should be removed, and run floss silk or small rubbers between the teeth, cleansing them in the best possible manner. The patients will recognize the difference, and the feeling of comfort and cleanliness will stimulate them to keep their teeth in the proper condition. Urge upon them the necessity of keeping the teeth clean; instruct them in the manner of using the tooth-brush; recommend some good antiseptic wash, and if directions are followed, a more perfect hygienic condition of the oral cavity is the result.

Dr. S. W. FOSTER. There is no subject that comes within the range of our profession that demands more attention than that of oral hygiene. Very often the patient does not appreciate this in any conception. I wish to call attention to a case we have in hand now at the college as the result of neglect. The patient lives near Atlanta. He had been suffering for some time with a broken-down lower bicuspid. A few weeks ago he appeared at the college clinic with the bicuspid teeth very loose. The soft as well as the hard tissues were breaking down. After treating the case for a time for necrosis, we procured a specimen of the tissue and turned it over to our pathologist for microscopic examination. After examination, he reported that it showed to be a round-celled sarcoma, of the most malignant type. This necessitated the removal of a section of the lower jaw. On closer examination we found that the glands of the mouth had become infiltrated. The removal of the portion of the lower jaw means only temporary relief, and the final result will be

that this man will die simply from neglect in the care of his mouth. The entire half of the lower jaw is involved, and we predict that only a few months of life will be spared to him. We who are connected with the colleges come in contact with the lower class, and see a good deal more of this than the practitioners who deal only with the higher class.

Dr. J. P. CORLEY. Dr. Beach misunderstood me with reference to the cleaning of the teeth. What I had reference to was removing stains from the anterior teeth. I think it is imperative that we remove all the deposits of calculus, but I think when we clean these stains from the teeth, we frequently do more harm than good; the patient will do nothing toward keeping them clean. My plan is to remove the calculus, but leave these stains, and tell them to go home and clean them. Teach them to make an effort to keep them clean. Make them do their own drudgery. It would be as preposterous to be asked by them to keep their nails clean. If we lose patients by this course, we are better off without them. Make them feel the importance of their co-operation in the matter, and they will be more impressed with our services. As soon as we recognize the importance of compulsory oral hygiene, the better off we, and our patients, will be.

On account of being delayed in the mails, the paper of Dr. F. W. STIFF, Richmond, Va., was received too late to be read before the association, and was read by title. The paper was as follows:

#### OUR NEXT FORWARD MOVEMENT: TEACHING DENTAL HYGIENE.

There are a few words I desire to say to you on behalf especially of the poor people of the country, who need dental attention and who are unable to pay for it,—even when they know their need, which is all too seldom.

It has become a common saying, however true it may be, that the rich are growing richer and the poor becoming poorer, year by year, in this country. Something should be done for those people who form the great majority of our population, to arouse them to a realization of their need and at the same time to supply that need.

It will not be denied that the great mass of the people are poor, measured by the standard of their ability to have the best class of dental work done; and certainly no intelligent and thoughtful dentist doubts that they are densely ignorant as regards their teeth.

The time has fully come in our history as a profession,—a learned and progressive profession,—to take cognizance of these two things in dealing with the problem of preserving the teeth of the people, the poverty of the people and their ignorance. I will reverse the last terms of that sentence, and say rather, the ignorance of the people and their poverty; for if you teach a people what they should know about their teeth, it will not greatly matter, after a few generations, how poor they may be, so far as their teeth are concerned. They will have learned that, barring heredity and the action of certain medicaments, if they keep their teeth clean they

will not lose them, and their being poor will prove a factor in the preservation of the teeth, since they would more likely use simple food. That they do not know enough about their teeth to appreciate their value and to properly care for them is a fact too well known to every dentist to require demonstration. Think of the parents who come to your office, unaware that the first permanent molar is a permanent tooth, and why it should be preserved; that the temporary teeth should be saved, and why; and many other things they should know in order that they might intelligently care for these valuable organs. The ignorance of the people in these matters is appalling and should awaken us to the necessity and duty of taking some adequate steps for their relief. Let us seriously ask ourselves if we are doing our full duty to our kind, if we only repair the ravages of decay and put our patients' mouths in as good condition as we can. Is it not selfish in us to use our knowledge only for our own benefit?

Gentlemen, the time has come in our history, when something better and greater must be done. We have, so far, been operative dentists only. The medical profession seems satisfied, in the main, to answer calls for the relief of their patients after they have been stricken with disease. We have been doing no more than this. I fear that we too often forget our duty, so far as giving careful instructions for the care of the teeth after completion of the work is concerned, simply pocketing the fee and thinking our whole part done,—still less, if they are parents, enjoining them as to the care due their children's teeth. We must not only teach those who come to us, but arrange to help the greater number who do not come, and teach them, so that they will not need to visit us; projecting our work even to many generations unborn.

To do our work best we must be preventive dentists. Let us organize a movement looking to the dissemination of dental knowledge among the people. And to the accomplishment of this end, we will have to begin with the children in schools. This movement is already crystallizing into shape, as will be told later. It will not do alone to advise the parents when the children are brought to us; it is then too late, and, besides, so few are brought.

We have entered upon another century, the twentieth of the Christian era. The nineteenth gave birth to and saw the great development of dentistry along operative and mechanical lines. We see that this is not enough by much; that notwithstanding the efforts of the dentists of this country, the teeth of the people are going from bad to worse, until some are so pessimistic as to believe that in a few hundred years we will be edentulous. I have faith to believe that there is a remedy for this, and that the twentieth century will be noted in the history of our profession for the growth and full development of preventive dentistry.

As I have said above, the idea is already growing and fermenting in the minds of many. Dr. D. T. Hill, in *Items of Interest* for February, 1900, well says "amen" to higher education for dental matriculates, but asks if it be not a fact that our otherwise intelligent public, educated under our free school system, are most



astonishingly ignorant of all dental matters. Let us take the children of to-day and educate them, from the time they enter school, as to the importance of the dental organs, and instil into their minds the great necessity of the proper care of the teeth. Thoroughly imbue them with this knowledge while at school, and when they have become heads of families they will realize the great need of caring for the teeth of their own offspring. When their children go to school, and are there taught what their parents learned before them (being at the same time instructed at home), it cannot fail to result in better care of the teeth, and, in the end, better quality of the teeth. Keeping this up from generation to generation, spreading this knowledge throughout the land into the homes of all the people, they will learn to discriminate as to the quality of dental work, and quackery and charlatanism will grow to be a thing of the past; a reaction will take place in favor of longer life for teeth, which many of us will not live to note, but which will be inevitable, and will entitle us to be kindly remembered by the oncoming generations. We in Virginia are becoming interested, and two years ago a committee was appointed, upon the suggestion of your essayist, to look into the advisability of securing the introduction into our common school system of the teaching of dental hygiene. This committee interviewed prominent educators on the subject, read papers before the normals and school of methods, and at the last meeting of the state association was instructed to take such steps as might be necessary to the accomplishment of this end. I might mention what is being done in other states did time permit.

Further than all this, and more far-reaching, is the work now being done by the National Dental Association. At the meeting held at Old Point in 1906, a committee was appointed, styled the Committee on Oral Hygiene in Our Public Schools. This committee consists of Drs. Richard Grady, chairman; Wm. Ernest Walker, secretary; your honored president, H. H. Johnson; I. P. Wilson, and F. W. Stiff. Their first work, as set forth in a letter addressed to all the organizations of dentists in this country, is "to gather statistics regarding the frequency of dental caries and other abnormal conditions of the mouths of school-children in the United States." To accomplish this end a series of blank forms was prepared to be used by those who were willing to make the examination where consent could be obtained from the authorities.

Such work as this is already being done in Germany and England. The examination of the mouths of 20,000 children between the years of six and fifteen, in Germany, showed that 95 per cent. were affected with dental caries. It was learned also that there were in the whole number examined 372 anomalies of different characters, including hare-lip, cleft palate, irregularities, V-shaped jaws, etc.

Dr. Denison Pedley, of England, found that 75 per cent. of the children examined had diseased teeth, which is thought to be a low estimate as compared with the condition on the continent of Europe and in this country.

Dr. Hopkins, in a fine article in the February *International Dental*

*Journal*, writes, "It is not too much to say that 30 per cent. of all teeth of children between the ages of five and fifteen in the public schools of this country are diseased." This is appalling when we know that only a small proportion of these children will ever receive treatment at the hands of a competent dentist; and when we realize that without such treatment they must inevitably go from bad to worse, the situation becomes truly alarming.

It is for us to determine whether the human race shall become an edentulous race, or whether it is worth while to combat the degeneracy already begun, and swing the huge pendulum the other way by eradicating disease and improving the structure of the human teeth. It might be interesting and profitable to go into the relation of diseases of the teeth to general diseases and their effect in producing moral as well as physical degeneracy, but time will not permit me.

Let me ask again, Is the dental profession content to live for the day and for itself? Shall we not rather be far-sighted, and look to the future; and philanthropic, and aid to uplift and help our kind, regardless of our own aggrandizement? The situation is well worth our most careful attention. It is said by competent and thoughtful observers that there "exists a more or less marked ratio between the physical soundness and mental acuteness of the child and the condition of the teeth." We must so educate the public that mothers of future generations will know that scrupulous care of their children's teeth is necessary, not only to save the teeth but to insure good general health. The best place for us to do this work (and we are the ones to do it) is the schoolroom. Get into the text-books what we want the children taught, and half of the work will have been accomplished. This will be difficult; it will take time, money, and much work; but nothing we have ever done will be so beneficial to our people.

I trust that you who are present at this meeting, when you return home and appear before your local societies, will see that the movement for securing statistics is carried out (if it has not already been done), so that we may have some data with which to impress the school authorities and the public.

I am just in receipt of a circular letter prepared by the above-mentioned National committee, to be sent to you personally, which contains interesting and encouraging reports from different sections, as to the interest that is being taken and the work that is being done along this line.

Dr. J. R. BEACH, Clarksville, Tenn., chairman of the Committee on Prosthetic Dentistry, then made the following report:

#### REPORT OF COMMITTEE ON PROSTHETIC DENTISTRY.

After having been appointed chairman of the Committee on Prosthetic Dentistry, I immediately entered into correspondence with not only the members of the committee, but with other members of the Southern Branch of the National Dental Association, endeavoring to secure essays on this subject, or the presentation of excerpts from our current dental literature reviewing the past year, as suggested by our president, Dr. Johnson.

My efforts with one exception have proved futile, and while it is true that it requires earnest work on the part of the chairman of the different committees to present a creditable report, yet it seems far easier to produce valuable papers or interesting features or suggestions pertaining to other practical branches of our profession than it does to this particular one,—prosthetic dentistry. The question naturally arises, Why is this true? Why is it that so many of the best members of our profession either ignore altogether or give so little consideration to dental prosthesis? Is it not a fact that no dental service, from an esthetic standpoint, is as a rule so ill performed as the prosthetic?

Is it because, to some, its accepted sphere lies in the construction of artificial dentures, considered by them to be more of a mechanical than of a professional nature,—this laborious work, therefore, being principally executed by the frequently inefficient “help” in the laboratory? Or is it due to the small remuneration we receive for this, as compared to other branches of the profession? If the compensation be insufficient to justify careful attention to every minute detail of this work, then let us establish such a fee that we can afford to give the time necessary for the accomplishment of the best obtainable results, for it is in every way worthy of our very best efforts.

I do not believe that this lack of interest should be attributed to the fact that one may obtain from the so-called “Dental Parlors” a “guaranteed set of teeth,—put up and turned out while you wait,—for four dollars and ninety-nine cents.” Do they not make gold fillings for a dollar, and gold crowns for five dollars? and if one preferred their services to ours, would they not go to them instead of coming to us?

Our duty is to the patient. While it is true that the rapid strides of progress made in dental science in the last two decades have so reduced the necessary loss of valuable teeth that it is seldom we are called upon to restore a complete denture, yet, when the unfortunate ones present themselves for this purpose, should we not give this as careful consideration as we would any other service we may render?

However, it is not my object to present a paper on this subject, but to hear from others who may have something of interest to present to the association under this division.

Advancement has been made within the last twelve months, and the field is not confined simply to the construction of vulcanite dentures, but many are the methods used for the replacement of the loss of one or more natural teeth by an artificial substitution.

The aluminum or gold lined plate, metal plates with or without rubber attachments, anchor plates of various kinds, continuous-gum work, bridges, stationary and removable,—all pertain to this branch of dental science.

We shall first hear from Dr. Johnson, of Brownwood, Tex., who has a paper entitled “An Artificial Molar and Its Functions.” After the reading of this paper, we shall be pleased to hear from others; the comparison of ideas is always educational and as such



instructs the brain and hand of man. Give us the benefit of your experience, and thus awaken an interest in this important subject,—prosthetic dentistry.

Dr. S. W. JOHNSON, Brownwood, Tex., then read the following paper:

#### AN ARTIFICIAL MOLAR AND ITS FUNCTIONS.

I select these words to get on the side of prosthetic dentistry and make a point in favor of restoring the natural molar when lost. The function of an artificial molar is exactly, in all respects, the same as that of a natural one. Some might say it was to retain the contour of the face of a pretty woman, or to prevent the sunken jaw of the thin-faced man, or to prepare the food for a weak stomach, and fulfill all the motions, operations, and actions for which the natural one is fitted. All this is true, and more beside. The point that I want to get at is the part it plays in the perfect digestion of starch. Approximately 50 per cent. of all the vegetable food we take is starch.

Taking the prosthetic view of a full denture we have twenty-eight dentals. Twelve of these are incisors and bicuspid, practically the other sixteen are molars, or grinders. Eight of these, however, the bicuspid, are not more than two-thirds on their grinding areas (surfaces) as large as the remaining eight, the true molars. So, letting a molar represent the unit of masticating surface, the eight molars would represent 60 per cent. of the entire masticating surface, and the eight bicuspid 40 per cent.

The loss of one molar is the functional loss of two, or 15 per cent. of the whole masticating surface, because the antagonizing tooth's function is also lost. The loss of a bicuspid represents the functional loss of 10 per cent. of the masticating surface. The physiological function of a molar (when I say a molar, I include the bicuspid also) is to masticate the food, and prepare it for the digestive fluids to act upon. The more thoroughly it is comminuted the better it is prepared for these secretions to act upon. One of these fluids is the saliva. Saliva practically digests the starch of food and turns it to glucose. This is proved when you take a dry piece of bread and masticate until it is thoroughly moistened with saliva, when a sweet taste is experienced. This sweetness is the transformation of the starch into sugar or glucose. The next and only active secretion is the pancreatic juice, which digests the starch more perfectly, and, as some of our most authentic physiologists say, instantly, if comminuted so as to present a large surface of contact and a ready permeability and tractable condition for the digestive fluids to act upon.

I will illustrate what I wish to impress in this way: If you have a few sticks of dry wood, and want to burn it to ashes as quickly as possible, you would split the wood up into as fine pieces as possible, saturate it with oil or turpentine and touch it with fire, and combustion will take place in a few moments, reducing the pile of wood to ashes. But if you take the same sticks of wood and use the same quantity of oil or turpentine, and pour it on the wood

and set fire to it, this same wood, which was reduced to ashes in a few moments when finely split up, will take possibly hours before the last coal will be an ash. So food containing starch, when finely comminuted by mastication, is partially digested by the saliva, and when it reaches that more potent digestant of starch, the pancreatic juice, it is instantly attacked and turned to glucose, which is taken up by those fifteen millions of little mouths, or absorbents in the intestines, the villi and valvulæ conniventes, as an emulsion; then, by natural organs made for that purpose, it is conveyed to the heart and then to the lungs for oxygenation, to be finally distributed to the different parts of the body. The individual feels refreshed and invigorated and health is abundant, because the molar gave a perfect and complete grinding, splitting the food up finely, which resulted in a thorough insalivation; this softened and comminuted the food still more perfectly, and, partially digested, it intermingles with the gastric juice, which further separates the particles of food, possibly presenting a greater surface contact; by the time it reaches the secretions of the pancreas it is almost instantly turned to a condition ready for absorption by the mouths,—valvulæ conniventes and villi.

Perfect mastication, immediate digestion, instant absorption,—good health! Imperfect mastication, partial digestion, non-assimilation, poor nourishment,—bad health! A majority of human beings think all food is digested in the stomach, when in fact the stomach and its secretions have no direct effect whatever on the starch of food. Dental professionals are not entirely free from this erroneous idea, which is demonstrated by the way some of us gulp down our biscuit and rice, believing that if we will do the deglutition act, gastronomical satiety will do the rest.

Having shown you the province of a molar's function, I will desist, thinking "a word to the wise sufficient."

### *Discussion.*

Dr. L. G. NOEL, Nashville. This paper seems to be an appeal for the making of larger occlusal surfaces to the teeth in the construction of artificial crowns and bridges, and of porcelain teeth,—an appeal for more perfect forms and models of the natural teeth. We all recognize the good sense of these suggestions. We have heard old dental operators criticize the artificial teeth for many years. Making them so small, and curving them so imperfectly made it necessary for a patient to make a "center shot" in order to strike the teeth together. Only a few years ago this was the case. The bicuspid and molars were too small and too narrow, especially the molars. They were poor imitations of the natural teeth. The resorption of the alveolar process lessens the surface, and this was one of the reasons for dropping the third molar in the manufacture of artificial teeth. It is true that we do not have as much room in the mouth for making the bicuspid and molars as large and graceful as the natural teeth, but certainly it is necessary that we should have the cusps of these teeth properly and perfectly curved.

If we stop for a moment, and consider why a man's teeth are

not made like a dog's, we can readily realize the wisdom of the Creator in forming them as he has. I think this is a strong argument in favor of the proper contouring of the teeth in making artificial dentures. We know that, with the character of the foods we consume, if the conical form were followed there would be more pyorrhea trouble than with the forms that nature has given us. How often do we see the cusps of the molars and bicuspid's ground off in an artificial denture, thereby destroying entirely the work of the manufacturer! We should regard this as sufficient reason for turning around and making the denture over again.

I want to say a word about the foods we consume, and also the effect of the saliva on the starchy foods. We know that converting starch into sugar is one of the functions of the saliva. This is especially true with thoroughly cooked starch, but it has very little effect upon raw starch. This is passed quickly into the stomach, and on into the small intestines, and it is there converted into glucose by the pancreatic juice, and taken up by the lacteals for the upbuilding of the tissues. I want to take exception to one statement the essayist made, which I do not think he intended to make; it is, that "the saliva emulsifies starch." We all know that it is not an emulsion at all; it is a simple solution. The fats are emulsified, but sugar does not need any such process to get into the circulation.

As I said, the saliva has very little effect upon raw starch, but in thoroughly cooked potatoes, rice, wheat, etc., a large portion of it may be acted upon by the saliva, relieving the small intestines of a great deal of work. My distinguished old friend, Dr. Madden, of Nashville, has frequently remarked that he very much questioned the wisdom of consuming the breakfast foods,—various forms of cereals so extensively advertised as being very digestible and beneficial. He says that it eliminates the necessity of mastication, which is nature's process of bringing the food in contact with the saliva, therefore interfering with the action of the saliva in converting the starch into glucose. We can readily see the bad effects of this by the following illustration: When we swallow hastily a large bulk of oatmeal, we have taken the stomach by surprise. The stomach has not had time to pour out the secretions to act upon the food. The process of mastication seems to have something to do with arousing the glands of the stomach to pour out their secretions. The sight and smell of food arouses the salivary glands to pour out their secretions, and we should give the stomach time to secrete its juice before we force upon it a large bulk of breakfast food. The foods we take should be very thoroughly cooked, and well masticated before swallowing.

Dr. J. P. DOTTERER, Charleston, S. C. In connection with the making of artificial dentures, I want to say that the teeth of an artificial set are all made of the same shade. Now, we know that very few sets of natural teeth are all the same shade. I wish the manufacturers would make them so that we could get the incisors one shade, the canines a little darker, the bicuspid's a little darker, and the molars a shade darker still. This would give the teeth the



appearance of having been filled, and would make a much more artistic set of teeth.

Dr. GRAY. I appreciate very much the reading of the paper. I was especially interested in what Dr. Dotterer said. It strikes me that we are not paying the attention to the study of making artificial dentures that we should. We should pay more attention to the study of the surrounding parts than we have done in the past. Let us combine the idea of mastication with the esthetic appearance of the surrounding parts. There is as much room for artistic work in this line as in operative work. It is as necessary for the prosthetic man to understand the sizes, shades, and angles of the teeth as it is for the operative man. If we are able to perfectly articulate the teeth, to give the proper masticating surface, and produce a thoroughly esthetic result, conforming to the other features of the face, we have accomplished as much as the operative man. But, when we leave this to the advertising laboratory man, who has never seen the patient, we have not accomplished much. No man can properly construct a set of teeth unless he has studied the face and features of the patient. I believe we neglect this branch more from the fact that so many laboratories are springing up where they will make you a set of teeth for three or four dollars,—satisfaction guaranteed. All you have to do is to send the impression and a biscuit bite, and they will do the rest, setting up the teeth and making the plate, without having seen the patient. It is impossible for a man to make a good artistic set of teeth without first studying the features of the patient, etc.

Dr. J. R. BEACH. I agree with the gentleman who has just spoken in regard to this branch of our work being very much neglected. In the construction of artificial dentures, we should study the characteristic features of the patients, note the temperament to which they belong, and select and set up the teeth accordingly.

Dr. C. L. Alexander read the following letter to the association from Dr. Frank Woodbury, of Halifax, Nova Scotia:

DR. C. L. ALEXANDER, Cor. Sec'y So. Br. N. D. A., Charlotte, N. C.:

*My dear Sir,*—With the approach of the annual meeting of the Southern Branch of the National Dental Association, my heart inclines longingly toward Atlanta. The memory of my reception at St. Augustine, and the consideration and honor conferred, has made the profession in the Southland very near to me. Each year I have thought that I might be able to be with you, but the balmy climate did so much for me that I have not needed to leave "The Lady of the Snows," as Kipling dubs Canada.

The dental profession in Canada is watching you across the border with keen interest. We congratulate you upon your official entrance into the American army. The advance step Georgia has taken in reference to dental attendance in your state insane hospitals greatly interests me. The British army has dentistry in the imperial service under serious consideration. It has been a long time coming, but we think now a faint streak of light meets our gaze. The

South African campaign has brought the need to the front. In Canada our profession is progressing. All our provinces have high standards of matriculation (about equal to matriculation in arts), but there is thus far no reciprocity between provinces. The walls of legislation are high. There is a movement on foot now to give us a universal Dominion standard of matriculation and registration. At least it is the entering wedge. Our provincial laws are, in the main, just, but, like your own state laws, bear hard on the men who, though thoroughly equipped, cannot pass from one to another state on account of some shibboleth required.

We are aiming for a Dominion association which, by mutual consent of the provinces will have the power to appoint a board of examiners whose certificate will give a man a Dominion registration. We propose that this shall be so high and so thorough that it will compel the respect of foreign boards, and be one small factor in the great plan of professional progress that will command respect.

I apologize for claiming a minute of the time of your gathering. May your convention be the very best yet held. To all who remember me, and to all who made me so very welcome in '98, I want to say, as our Indians say, "I shake hands with you in my heart." May I look forward to the time when your National may be called International, and our prospective Canadian Association may be a branch.

When the thermometer stands high in your country, we would welcome any and all of our brethren from the South to our delightful summer clime, where from June to October our air is most salubrious.

Yours very sincerely,

FRANK WOODBURY.

On motion, Dr. Alexander was instructed to answer the letter from Dr. Woodbury, and extend to him the kindest regards of the association.

(To be continued.)

---

## NORTHEASTERN DENTAL ASSOCIATION.

(Continued from page 938.)

### FRIDAY—*Afternoon Session.*

THE following paper, by Dr. WM. L. ELLERBECK, Salt Lake, Utah, was read by the secretary in the absence of the author:

### POSSIBILITIES IN THE CONDENSATION OF GOLD FOILS: COHESIVE VS. NON-COHESIVE.

Since the introduction of cohesive gold as a filling material, much difference of opinion has prevailed on the part of various operators as to its value as a tooth-saver compared with soft or non-cohesive gold. Only recently, in a discussion held at the Academy of Stomatology in Philadelphia, the subject was given considerable attention, men long prominent in the profession expressing their belief that soft foil is the better preserver of tooth-structure,—because,

primarily, according to their argument, more can be packed in a given cavity and better adaptation can be secured. Others present were at variance with this opinion and championed the more extensive use of cohesive foil in accordance with methods calculated to bring out its fullest possibilities. As bearing on this controversy, Dr. G. V. Black has stated that "with the same care and skill more gold can be put into a cavity of a given size, using non-cohesive gold, than can be done with cohesive gold." ("Technical Procedures in Filling Teeth," page 104.) On purely theoretical grounds this statement appears fallacious, for, as stated in the discussion before mentioned, the treatment given the gold to prevent cohesion insured the maintenance of individual sheaves, whereas there would be a condensation in cohesive gold resulting from more intimate molecular contact.

As an outgrowth of this discussion, which obviously could not be settled by a war of words, the suggestion was made by one of the members championing the cohesive foil, that he would enter into friendly contest with any or all of the gentlemen who were exploiting the attributes of the non-cohesive material and as a means of determining definitely would fill a given matrix with cohesive gold, the same matrix to be filled later by the soft-foil champions, the respective densities of the fillings to be subsequently accurately determined.

For some reason the soft-foil champions failed to respond, but as there had been a similar dispute between some soft-foil advocates resident in Baltimore and the self-same gentleman who was willing to back his faith in cohesive gold, it was decided, at least as far as some were concerned, that the results of the Baltimore fillings would serve to convince. Since it has an interesting bearing on this long-drawn-out controversy and because it shows the possibilities of the respective materials in point of density attainable when properly worked, I feel at liberty to comment upon the result. To avoid the possibility of incredulity on the part of anyone, and to show the care that was exercised in the determination, I shall review the figures obtained in the second test, which was, I feel, decisive.

### *First Trial.*

Much to the surprise and apparently adverse to the theory advanced, the first trial resulted in a victory for the soft foil, showing the following interesting and rather remarkable result:

	Density.
<i>Soft foil</i> , Abbey's (inserted by Dr. Gingrich, of Baltimore).....	18.94
<i>Cohesive gold</i> , Decimal rolled No. 30 (inserted by Dr. Joseph Head, of Philadelphia) .....	18.76

Besides the dinner, the result cost the Philadelphia gentleman some moments of uneasiness, and he demanded a second trial, with the privilege of watching the Baltimorian insert the soft-foil filling. Noting the time spent and the energy expended by the latter, the Philadelphia gentleman, who is expert in the manipulation of cohesive gold, was extraordinarily careful in the placement of the pieces, and made a more determined effort to bring out its fullest



possibilities. The Bonwill mechanical mallet was in each instance employed to condense the cohesive gold.

### *Second Trial.*

The result of the second trial is remarkable for several reasons:

First: The density of the soft-foil filling corresponds almost precisely with the first trial, there being only 0.04 of one per cent. difference, and, since all care was exercised by an expert worker of soft foil, it would seem to indicate the maximum density possible to obtain with this material.

Second: The density of the cohesive foil is approximately that of cast gold, showing therefore a minimum of air space and indicating that the theory advanced as to a natural molecular condensation in cohesive gold is proved in fact.

	Density.
First Trial: Soft foil .....	18.94
“ “ Cohesive foil .....	18.76
Second Trial: Soft foil .....	18.96
“ “ Cohesive .....	19.28

Following are the figures obtained in determining the

### *Densities of Fillings of Second Trial.*

COHESIVE GOLD. Decimal rolled No. 30, annealed (inserted by Dr. Joseph Head of Philadelphia):

	Gram.
Specimen plus single raw silk fiber .....	1.38380
“ “ correction for weights .....	.00003
	<hr/>
	1.38383
“ minus error for resting point .....	.00015
	<hr/>
	1.38368
“ “ weight of string .....	.00032
	<hr/>
True weight of specimen in air of 22° C.....	1.38336
Weight of specimen (cohesive), in water of 22° C., plus silk fiber .....	1.31232
Weight of specimen plus correction for weights.....	.00003
	<hr/>
	1.31235
“ “ “ minus error for resting point.....	.00015
	<hr/>
	1.31220
“ “ “ minus weight of string .....	.00032
	<hr/>
True weight of specimen, in water of 22° C.....	1.31188
“ “ “ “ in air 22° C.....	1.38336
“ “ “ “ in water of 22° C.....	1.31188
	<hr/>

Loss of weight (weight of equal bulk of water at 22° C.) .07148

The density of the specimen, compared with pure water at 22° C., was therefore 19.353.

However, we must reduce this to compare with water of 4° C. in vacuum:

Let M = Mass; W = Water; Q = Density of water; Z = Density of air as compared with water.

Then specimen:  $M \div W (Q - Z) \pm Z$

Substituting in the equation we get the following:

Specimen:  $\frac{1.38336}{.07148} (99748 - .0012) + .0012 = +19.2837$ .

Or as stated, Cohesive gold = 19.28.

NON-COHESIVE GOLD (inserted by Dr. Gingrich of Baltimore):

	Gram.
Specimen plus silk fiber.....	1.37246
"    "    correction for weights .....	.00003
	<hr/>
"    "    minus error for resting point .....	1.37240
	.00015
	<hr/>
"    "    weight of string .....	1.37234
	.00032
	<hr/>
True weight of specimen in air of 22° C.....	1.37202
Weight of specimen (non-cohesive gold), in water of 22° C., plus string .....	1.30035
Weight of specimen plus correction for weights .....	.00003
	<hr/>
"    "    "    "    minus error for resting point.....	1.30038
	.00015
	<hr/>
"    "    "    "    weight of string .....	1.30023
	.00032
	<hr/>
True weight of specimen in water of 22° C.....	1.29991
True weight of specimen of non-cohesive gold in air of 22° C.....	1.37202
True weight of non-cohesive gold in water of 22° C....	1.29991
	<hr/>
Loss of weight (weight of equal bulk of water at 22° C.) .....	.07211

Reduced to water of temperature of 4° C. in vacuum:

Specimen:  $M \div W (Q - Z) + Z$

Substituting  $\frac{1.37202}{.07211} (.99784 - .0012) + .0012 = + 18.96$

In comparing the density of the two specimens and the separate methods of their insertion, the conjecture naturally arises as to the possibility of securing such results in the mouth, or if this be impossible, as to which material can be made to approximate more nearly its maximum with toleration upon the part of the patient. Here let me state that the arm and shoulder of the Baltimore gentleman were sore and lame for some time after the insertion of the soft foil, while the Philadelphia gentleman experienced no such signs of fatigue or discomfort.

Now, if it required such an expenditure of energy, such an arm and shoulder-weight to produce, in an iron matrix placed on an unyielding support, a soft-foil filling less dense than was produced with cohesive gold foil, and the conditions which presented and the treatment accorded the latter more nearly to be met with in the mouth than the conditions necessary and the treatment required to produce the maximum density with non-cohesive gold, it is safe to predict that in a practical filling operation,—such as, for in-

stance, in a lower molar tooth, where the jaw is yielding and the rigid welding treatment necessary to secure the maximum in non-cohesive foil out of the question (for if the operator's arm and shoulder became lame in the effort, how think you a patient's jaw and head would feel?) there would be a wide difference in density in favor of the cohesive gold could a comparative test be made.

The density obtained in the second trial with cohesive gold, which is considerably higher than that obtained with non-cohesive, and in itself sufficient to end the argument as to the possibilities of the respective materials in this particular, might be duplicated in many instances in the mouth, for obviously there *is* a natural cohesive condensation resulting from mere contact of different pieces of cohesive foil, and if care be taken to exclude the air spaces by the careful placement of the pieces, it is theoretically possible to obtain the density of cast gold (19.3) with only enough malleting to weld out a certain porosity in the foil occasioned in its preparation. However, we must consider the practical as well as the theoretical side of the question. We know that the great majority of people are able to withstand the full impact of a hard blow from the Bonwill mechanical mallet. The degree of endurance, however, varies considerably. Some will tolerate only a few blows in quick succession, requiring a cessation of the malleting for approximately the same duration, these cycles being necessary to the end of the operation. Others are able to withstand the full impact of the mallet blow almost continuously, depending upon the sensitiveness of the pericementum. In any event, I believe approximately the same result is obtained, notwithstanding even possible differences in the cushion elasticity of the pericementum. Like a rifle ball penetrating a window-pane, puncturing a minute hole and scarcely occasioning any jar to the glass in its entirety, a small, smooth plugger in a Bonwill mallet run rapidly has largely done its work and caused a considerable condensation at the point of impact before the tooth has had time to rebound from the blow.

It is said that the progress of medicine is gauged by the methods of practice in vogue by the country physician. If this is true of dentistry, but speaking rather of the average dentist, then and then only can we concede anything in favor of soft foil, for there is a wide difference and distinction between the possibilities of a material in the hands of a skilled few and the practical value of the material in the hands of the many. This is also true of methods; for instance, we may cite as illustrating this the argument that it is always safest to extirpate the pulps of teeth preparatory to crowning, owing to the possibilities of pulp-death. This may be true where the skilled operator is concerned; but, to my mind, it is a questionable procedure so far as its universal practice by all dentists is concerned, for I venture to assert the greater evil is likely to result from unclean and inefficient root-filling. This, however, is no argument against the correctness of the procedure if properly performed. So, also, it is true that the average dental practitioner is either careless or unskilled in the packing of gold, and, as an essential to proper condensation of cohesive gold is proper cavity



preparation in accordance with the principles laid down by Black and others of his school, ease of insertion necessarily following in the event of the employment of this system; and as the average practitioner, again, is lamentably ignorant or careless in this particular, it may be that soft gold at the cervix is the safer material for him to employ. However, so far as the possibilities of cohesive gold as against non-cohesive are concerned, which is the real point at issue, we need, after the actual demonstration of the condensative superiority of the cohesive variety, no greater argument than the actual practical filling operations of many men, and are happy to note a continually increasing proportion of young men who employ it exclusively,—men skilled in proper cavity preparation, facilitating perfect adaptation, thorough ease of insertion, as likewise great rigidity where essential to withstand high crushing stress, and making easier the restoration of original contours,—in all tending to produce fillings which are therapeutic and prophylactic. Failure to secure such results is because of inexcusable ignorance, carelessness, or inability on the part of the operator; wholly a matter of personal equation; the man, and not the material.

The next paper read was that of Dr. W. F. BISBEE, Camden, Me., as follows:

#### CROWN- AND BRIDGE-WORK: BAIRD METHOD OF MAKING CROWNS.

The line of work comprehended in this title is quite commonly referred to as "the latest development of modern dentistry." The inference that it is of recent origin is true only as regards the perfection to which the details have been brought. Crown- and bridge-work as such are old,—almost as old as dentistry itself. There is abundant evidence that these forms of dental prosthesis were practiced among the ancients, but it has been only within a dozen years or so that the possibilities of bridge-work have been recognized. Within that period its development has been amazing. Along parallel lines the pivot tooth has given way to more useful, more durable, more recent forms of crowns. Crown- and bridge-work is taught as a separate branch in the schools, and a knowledge of this department is regarded as essential to the modern trained dentist.

I will now show Dr. W. H. Baird's method of making crowns. This method was placed on the market in the year 1898, and in the summer of 1899 I purchased the outfit and have been using it since that time. I have found it a very convenient, quick, and easy way for the country dentist to make his crowns. You cannot expect the country dentist, where he is performing all kinds of dentistry, to follow the expert specialists in this particular branch, and no device, however perfect, can teach the dentist how to do crown- and bridge-work,—only to lessen the work.

This device consists of wedging pliers the jaws of which open parallel to each other, the lower jaw being grooved to admit the slides which carry the teeth-dies, of which there are 248. Put up in this box [illustrating] are three trays; one with the centrals, laterals, and incisors, another with bicuspid, and another with molars. The dies are made of specially alloyed metal, very hard and tough, and with proper use they are practically indestructible.

The selection of dies is such that one of the proper shape and size may be found to suit almost any case, without the use of pliers to elongate or depress cusps. In most cases, if proper selection be made, no contouring will be found necessary.

*Making Gold Crowns, etc. Soldering.*—Many perform this operation with almost uniform success, while others, in spite of all the precautions they employ, are constantly meeting with mishaps. It must be borne in mind, however, that to effect a union between metals and metallic surfaces, the latter must be perfectly clean,—that is, they must be free from any foreign substance. A coating of oxid upon the surfaces to be united is the most common obstacle encountered in the process of soldering. It acts the same as two masses of soft wax with a layer of paper between, and as the gold plate we use is never pure, and as the solder employed is less pure than the plate, both would readily oxidize under heat and fail to unite. To prevent the formation of this coating we use what we call a flux. Borax is the simplest and one of the best substances for this purpose. When we coat the surfaces to be united and the solder as well with a solution of borax, and heat the mass, the borax fuses and spreads over the surface in the form of glass, thus keeping the air from coming in contact with the parts and preventing oxidation.

But our soldering is complicated by the presence of porcelain teeth, which must be gradually heated and slowly cooled in order to avoid fracture. To guard against this it becomes necessary to incase the teeth in a substance that will protect them from direct contact with the flame as well as insure their slow and gradual heating. I use the common bank sand, etc., thus [demonstrating].

In my many years' experience in soldering I have never broken a single tooth, and I always invest the teeth in this way: The investment should be about one-fourth of an inch thick outside of the tooth,—perhaps a little more in large cases. After it has set the investment should be trimmed, so as to be of equal thickness outside of the porcelain, and be made smooth. After the hard wax which holds the parts in position has been removed, the metal should be thoroughly scraped, and all places about the parts where the borax is liable to come in contact with the porcelain, as well as all sharp angles next to the gold crowns, should be filled with gold leaf. The pins and all exposed metal should receive a coating of borax of the consistence of thin cream. If too thin, it is liable to run under the backing and cause trouble. To avoid this it is best to apply it with a match-stick whittled to a thin edge. Each piece of solder should be dipped into the borax mixture, and it is best not to place too much solder in the backing and joints in the first instance, but after the first portion has been melted, more can be added and the soldering completed.

In heating the invested crown or bridge, it should be placed upon the soldering block with the teeth below the backing and the solder exposed on top. It should also rest upon the charcoal in such a way that there will be an open space below the center of the piece so that the flame will pass under it. After the piece gets sufficiently

heated so that the solder will remain in position, I turn the piece upon its side, holding it with my mouth blowpipe until the investment is nearly at white heat. In this way only can the teeth be heated in advance of the metal portion of the piece.

*Soldering-block, etc.*—The object of heating the porcelain in advance of the backing is to expand and enlarge the former so that there will be room in which the pins can expand. If the backing and pins be expanded by heat before the porcelain the pins will act as wedges and split the teeth. The pins should not be riveted or split, but left full length. When, after soldering, the teeth are found to be cracked horizontally near the pins, the accident has been caused by the heating of the pins in advance of the porcelain or by the cooling of the porcelain before the pins have contracted. Another danger in soldering exists in finding cracks in the teeth in a vertical direction next to the backing. This is caused by the borax getting between the backing and the teeth. The borax in its fused state unites with the porcelain, and as it contracts more than the porcelain in cooling, it thus breaks the teeth. The accident is often unnoticed at the time it occurs, but when subjected to the strain of mastication the teeth come off. This is the most frequent occurrence in soldering, and accounts for the many cases in which teeth "come off" after the piece has been placed in the mouth. Upon examination it will be noticed that the inside of the backing is covered with solder, thus showing that borax led the way for the solder. Prevention consists in applying the borax carefully so that none of it can find its way behind the backing. One cannot be too careful in all the most minute details of soldering.

Some dentists consider it advisable to devitalize the pulp of each tooth to be covered by a crown or bridge, but a live tooth covered with a well-fitting artificial crown, cemented in place, is supposed to be unusually well protected against external changes and bacterial influences. Such being the case, it is difficult to understand what necessity there is for devitalizing the tooth in advance. Were pulps liable to die under crowns, it would be different. We can conceive of but two conditions under which pulps might die when covered with metal crowns. One is decay occurring about the cervix through the ill fitting of the crown; and the other, thermal changes caused by cutting away too much of the enamel and dentin. For this there is certainly no necessity.

When a tooth which has to serve as the abutment for the crown is much tipped in position, instead of cutting away the tipped portion to admit of the bridge, avoid this by regulation. The tipped tooth may, by a suitable application of force, be brought into an upright position and the bridge when inserted will retain it there.

It seems strange that the death of the pulp under a crown should be the frequent experience of some practitioners and not of others. I cannot recall a single instance of this character in my personal experience in crown- and bridge-work.

I will now show you a few models. This case [exhibiting] was brought before me seventeen years ago. A lady having the central incisor gone was wearing a plate which annoyed her very much.



There was a gold filling in the central and one in the lateral. I drilled a little hole in both the central and the lateral; then I took a porcelain tooth the same color as her natural teeth and backed it up with gold in the usual way; two little projecting spurs were soldered to the backing. Then I placed a little jack between the two teeth and pressed them apart sufficiently to allow me to insert my dummy tooth and the pins which project into the holes I drilled in the gold fillings, pressed my dummy in place, and when the natural teeth came together my tooth was firm. The patient has been wearing this tooth for seventeen years, and it is doing good work to-day. I have placed quite a number of teeth in the mouths of different patients in this way, and in all cases with most excellent results.

A great many times when attaching a gold dummy to a gold crown, you can economize by filling the dummy with cement; after it has hardened, trim the cement the shape you desire, dry it out well by means of heat, and then cover the cement with two or three layers of gold leaf, pressing it down with your finger and instruments; apply your borax and run your solder over the gold leaf in the usual way. You will find you can save a great deal of gold solder by the use of cement with just as good results.

At times you will find you have trimmed your gold crown so it is short and does not run under the gums as you wish, and in replacing gold crowns after they have been on teeth a number of years you will find the same trouble (short). The gold crown can be lengthened very easily. Bend a wire in the shape of a clothespin [exhibiting]. Place between the jaws a piece of gold the same as that of which you made the crown. Slip the clothespin wire on your crown, where it is short, until the gold comes in contact with the gold band; solder; remove the wire and you have the gold band lengthened. The clothespin wire is used only to hold the gold in place while soldering. In my many years' experience in bridge-work I have had but one case where the natural teeth were tipped so that I could not put my bridge in place on the teeth after it was made. In that case I sawed through the backing between the teeth and placed my bridge in position in halves, then pinned the bridge together after it was in the mouth. Usually we can avoid this by regulating.

In making a bridge like this [exhibiting], I fit my gold caps to the canines perfectly, remove the caps from the natural teeth, heat them quite hot so that modeling compound will stick, and press the porcelain teeth which have been selected for the case into the modeling compound between the gold crowns. Then we have the gold crowns and the porcelain teeth all connected in place by the modeling compound. Place in the patient's mouth with the gold crowns in position; arrange the teeth in order and to fit in the gums; cool the compound by water and remove the teeth and crowns from the mouth; invest the piece in plaster and sand in the usual way. After it is hard remove the compound and back the teeth with gold; apply the borax and solder the backing together, and the backing to the gold crowns, but do not let the solder flow

on to the platinum pins. After the piece is cold, remove it from the investment. The teeth, of course, drop off and you have the gold crowns with the backing soldered together. Place it in the mouth in position and file the backing to fit the gums as you wish. Then take each porcelain tooth separately and fit it to the gum. If any one or all of the teeth do not press on the gums, drill the pinhole in the backing with the dental engine until you have each tooth in its exact place fitting the gums perfectly. Hold the teeth in position by means of wax; remove the piece from the mouth; invest in plaster and sand; remove the wax and fill in around the pins with gold leaf so the borax will not flow on to the porcelain; solder; finish, and your bridge is completed.

*Gold Tips.*—After the porcelain tooth is fitted to the mouth and backing, take a sharp instrument and scratch across the backing, leaving of course the backing long where the end of the tooth comes; remove the tooth and cut a strip of gold backing, about twice the width of the tooth to be tipped; with the pliers twist the little piece of gold which makes the surplus length to an acute angle, so that it will rest on the gold backing over the scratch you made so as to hold it in place when soldered. After soldering, cut off the surplus length of gold; place the tooth in position, and with a burnisher press the tip against the end of tooth to make a nice edge; invest and solder. This applies to central and laterals.

Many of the country dentists claim they cannot afford to buy a crown outfit. Well, they *can* afford to buy a cuttlefish bone for one cent, the same as I have here [exhibiting]. Then you have the whole outfit and can make any kind of a gold crown about as quickly and nicely as the expensive outfit will do the work. In making a central, lateral, or canine, select a porcelain tooth the shape you want, back it up with modeling compound the right size, then press it into the cuttlefish. Remove the tooth and press it into another place in the cuttlefish to get the impression of the back. You will find the cuttlefish gives very sharp impressions of the tooth. Then place a common brass ring over the impression of the tooth in the cuttlefish, pressing the ring down into the cuttlefish so your metal will not flow out. Pour any kind of metal into the impression without burning. After it is cool, remove from the cuttlefish and you will find you have a very sharp, smooth die. Make your counter die, and you are ready to swage the gold crown in shape.

In making bicuspid or molar crowns in this way, select quite a number of different teeth which you have extracted, press the ends of the teeth into the cuttlefish, and pour the metal as before. Make a gold band the right size, solder, and you have the crown.

Seamless crowns can be made by pressing the porcelain tooth backed up to the given size with modeling compound endwise into the cuttlefish. Pour the metal the same as before and you have the die ready to slip into a gold shell of the right size. These shells are made by some of the dental depots and placed on the market for fifteen cents above the cost of manufacturing. With the gold shell slipped over the die drive into a block of soft pine wood;

remove from the wood; melt the metal out of the gold crown to retain the contour, and the seamless crown is made.

A number of you have seen my soldering-lamp. This lamp was manufactured to take off paint and varnish from old carriages and buildings. It consists of a common alcohol lamp with a boiler above, partly filled with alcohol, and is provided with a safety-valve. The alcohol in the boiler is heated by the lamp below, forcing the vapor of alcohol from the boiler through the little tube, through the alcohol flame from the lamp below, making a very hot, self-acting, compound blowpipe. This compound blowpipe or lamp can be purchased in most of the hardware stores for seventy-five cents, and with your cuttlefish for one cent you have the whole outfit for making soldered or seamless crowns. With whatever crown system you have, the cuttlefish will come into play at times in some particular case which may come before you.

---

### ONTARIO DENTAL SOCIETY.

(Continued from page 968.)

DR. A. A. WILCOX, of Cleveland, then read the following paper:

#### DENTAL CEMENTS AND THE CAUSE OF THEIR FAILURE AS FILLING MATERIALS.

At present we have only three filling materials which have survived the test of practical experience, gold, amalgam, and cement, each of which possesses certain advantages which adapt it to certain conditions. But of the three I think no one will dispute my statement that cement adapts itself to the greatest number of varying conditions. Neither will my claim that it has by far the greatest preservative quality, by reason of its easy adaptation to the cavity and its harmony with the tooth-substance, be disputed. The zinc does, however, lack the one important property of permanence, and to overcome this defect manufacturers have expended an amount of labor and study which, if applied to any other material, would have resulted in a high degree of perfection. The reason of failure has been that they builded on a foundation of sand, the material used as a base being zinc oxid. It is amazing that so high a degree of perfection has been reached with so many difficulties to contend with. I know no material which requires such a variety of exact and complicating properties as dental cement. I will enumerate some of its essential qualities:

1. It must be of such composition as to be plastic during a short period of time and then rapidly harden.
2. It must pass through this plastic condition at the temperature of the mouth and not develop any excessive heat.
3. In the act of hardening, it must neither expand nor contract.
4. It must possess adhesiveness both while plastic and after it has hardened.
5. It must become very hard, without brittleness, that it may resist abrasion.



6. It must be essentially non-escharotic, and must, moreover, contain no toxic substance.

7. It must contain no organic matter susceptible of fermentation or decay.

8. It must be absolutely impervious to moisture.

9. It must be insoluble in the fluids of the mouth under all conditions.

10. It is also important that a dental cement be easily manipulated,—that is, that a great degree of skill should not be necessary to produce satisfactory results.

11. The composition should be such that it will not be susceptible to changes or deteriorations within a reasonable time.

Only one class of cements has been in use, viz, the so-called zinc oxyphosphates. It is the quality of insolubility which the makers of cement have for years been striving to achieve. A thousand and one means have been tried, and while a degree of perfection has been reached, the point of insolubility has remained an insurmountable obstacle to the success of zinc oxid cements. Recognizing, therefore, that in the line of zinc cements no further improvement could be hoped for, manufacturers in different parts of the world have been searching for some new material from which a true insoluble cement could be made.

Cements usually fail because, first and most important, cements are rarely mixed properly. It is a known fact in chemistry that one chemical for which another has an affinity will take up an exact quantity, no more and no less, under any circumstances. In mixing cement composed of zinc oxid and phosphoric acid, if the "mix" is too thin, there is an excess of phosphoric acid, and this acid will wash out. If the "mix" is too thick, there will be an excess of powder which simply remains as inert material causing the plug to crumble. The only possible way to overcome these defects would be to carefully weigh out the exact quantities,—a thing the ordinary practitioner has neither the means nor the time to do. It is my belief that, without exception, those fillings which have proved durable were accidentally mixed in the exact proportion necessary to produce a perfect chemical compound.

Second. The surface of a zinc cement filling is continually softened from the effect of the warm moisture of the mouth to which it is subjected. I have never seen a zinc cement plug the surface of which would not soften, if kept in water at a temperature of 80° F. for one month, while in cold water no appreciable softening occurs.

Third. The effect of the acid or alkaline secretion. That the acid and alkalis do dissolve zinc cement has been so often demonstrated that I need not dwell upon this point.

Here then we have a combination of conditions that cannot possibly be overcome: but, notwithstanding the defects which we find in dental cements, we must of necessity use them. They are not all alike. For example, a plug dropped in red ink will show whether it is impervious to moisture. If the ink saturates it, so will also the fluids of the mouth. Submersion in a 20 per cent. solution

of citric or lactic acid or in ammonia will show its resistance to the acids or alkali. A magnifying glass will demonstrate its freedom from air bubbles caused by incipient effervescence. The microscope will betray the presence of free phosphoric acid. If such is the case the strong affinity of the acid for water will cause its easy dissolution.

### *Discussion.*

Dr. J. B. WILLMOTT. In the case of every material that is used for filling, the character of the result obtained will depend upon the operator. One carries his gold foil around in his breast pocket for weeks and then complains that it does not work nicely, and blames the maker. Another lights his annealing lamp with a match on which the sulfur is still burning and which he carefully wipes off on the wick; anneals his foil by passing it once through the flame and wonders why his gold fillings tarnish. The same class of men buy a package of cement, remove the corks, and never replace them. In mixing, the slab is not clean, the fluid is dipped out of the bottle and dumped into the powder, and with some difficulty reduced to the semblance of a plastic mass; this is hurriedly introduced into the cavity as it becomes granular, forced into position with points that chop it up, and when it is half hardened, the surface is smoothed over, and immediately flooded with saliva. Do these methods produce good results? Never. Minute attention to detail is the only road to success in dental operations.

Let us note, as to cements (1) that the powder is calcined at a high temperature and is markedly hygroscopic, and is only preserved in a good condition when thoroughly protected from the air, hence best procured in small packages; (2) that the fluid is hydrated phosphoric oxid, and is never entirely satisfied with water,—hence, unless well corked, absorbs it from the air; (3) when mixed, the cement may be regarded as an hydrated phosphate of zinc oxid.

To secure the best results the most thorough intermixture of the fluid and powder is essential, as in all chemical combinations, the more closely the elements are brought into contact and the more homogeneous the mass, the more prompt and perfect the combination. How may this be secured? Choose a cement which is medium or slow setting, then mix it under conditions which retard chemical action,—that is, at a low temperature. A good method is to artificially cool a clean slab so that it is at a temperature of say 60° F.; also cool the well-corked bottles. Transfer to the slab, thoroughly dried, a mass of powder, and beside it place sufficient fluid to make a mass adapted to the size of the cavity. With a clean spatula mix a portion of the powder into the whole of the fluid, then add more powder and thoroughly mix, and repeat until a homogeneous plastic mass of the desired stiffness is obtained. At this low temperature we have a merely mechanical mixture, which if introduced in this condition into water could be very readily diffused through it. This plastic mechanical mixture is now to be transferred to a dry and protected cavity, and rapidly adapted to

its walls with instruments which as little as possible penetrate its substance. The sudden elevation of temperature to approximately 100 degrees induces immediate chemical action, and the fluid and powder combine into a hydrated phosphate of zinc oxid. If the filling is protected from moisture until chemical action is complete, we have obtained the best possible result from the sample of cement used. I have been informed that the essayist, Dr. Wilcox, after long and careful investigation and experiment has succeeded in perfecting a dental cement, which to some extent at least is free from the weaknesses of the zinc cements. I had expected him to call attention to it in his paper. On inquiring from him as to why he had not, he informed me that, though now a manufacturer he was formerly a dentist, and the professional instinct was yet sufficiently strong to prevent him from even seeming to take advantage of his position as essayist to boom his own production. I trust that during the discussion he will, for the time, forget that he is other than a manufacturer with goods to sell, and give us such information concerning this new cement as will enable us to give it an intelligent trial. It is on the market under the name of "Archite;" it is said to contain no zinc, and for it is claimed that it is harder, more dense, takes and keeps a better polish, and is more insoluble than any of the zinc cements. If this be true we all want it. Manipulated as I have just described, it mixes readily into a beautifully plastic mass, and at a low temperature shows no tendency to rapid hardening. Introduced into the mouth, the chemical action is prompt, and in a very brief time it becomes very hard. It takes a fine polish, and, so far as I have been able to observe, is resisting solution. Of course not only months, but years must elapse before a definite conclusion as to its permanence can be reached.

Dr. H. J. HUDSON, Toronto. If you watch a good mortar-mixer, you will see that he adds the sand and lime to the water little by little, and mixes it thoroughly before he adds any more, and what is true of mortar is true of tooth-filling dental cements. The powder should not be shoved into the liquid at once and mixed until it is thick enough, at one time taking thirty seconds and another two minutes, according to the guess as to quantity. If we add little by little we are more apt to get the exact chemical quantities required to make a good cement. It should be inserted at once when mixed, and the edges kept down until it sets sufficiently hard. I firmly believe that every cement, to give best results, should be inserted under pressure, wherever possible.

Dr. A. W. THORNTON. If you bring a bottle of ice-water into this room at the present time, you will find that it will be just a moment here until there is a volume of moisture deposited on the surface. It is a well-known fact that moisture introduced into your cement will hasten the hardening, so it is a question whether you could not counterbalance by the moisture the effects you get by the reduction in the temperature.

Dr. W. A. MACLAREN. I would like to know why it is that discoloration comes over the archite after it has been well manipulated and inserted?



Dr. WILCOX. Do I understand the gentleman to say that the archite discolours in the mouth after it has been inserted, or that it discolours while manipulating?

Dr. W. A. MACLAREN. After it has been inserted.

Dr. WILCOX. In mixing with a steel spatula or with any spatula, no matter what the material of the metal is, you grind off a little iron, and the phosphate of iron produced will give the filling a reddish color. I would say that the vast majority of dentists bear on the spatula harder than is necessary. A great many times a bottle of cement is opened, and for some cause or other it does not work as well as it did in the beginning. That can almost invariably be restored when the powder is heated. The fast-setting cements contain a certain percentage of water: if you evaporate, the more phosphoric acid you have the more slowly your cement will harden. Now, the point that the gentleman brought out in regard to cooling a slab, and the fact that in going into a warm room it showed an accumulation of moisture: I think the cooling of the slab is better; although you might get a small degree of moisture, I do not think it would have a perceptible effect upon the cement: certainly you can manipulate much more satisfactorily.

Dr. F. B. NOYES, of Chicago, then read a paper on "The Enamel," illustrating it with a stereopticon.

The discussion was participated in by Drs. S. Moyer, Galt; A. J. McDonagh, Toronto; J. E. Wilkinson, Toronto; M. W. Sparrow, Toronto.

#### CLINICS.

The following gentlemen gave clinics in the infirmary of the Royal College of Dental Surgeons, on the forenoon of Thursday, February 20th: H. A. Pullen, Buffalo; E. E. Oris, Milwaukee; A. A. Wilcox, Cleveland; J. L. Young, Detroit; A. Turner, Chicago; R. J. Mitchell, Perth; J. H. McCulloch, Perth; G. J. Musgrove, Niagara Falls; W. J. Hill, Alliston; A. A. Babcock, Brantford; E. M. Doyle, Brantford; A. J. Irwin, Wingham; A. H. Allen, Paisley; W. J. Bruce, Kincardine; M. F. Cross, Oshawa; C. E. Clotz, St. Catharines; W. A. Bromlee, Mount Forest; D. Baird, Uxbridge; A. J. Husband, Toronto; J. F. Adams, Toronto; Jas. Island, Toronto; C. E. Pearson, Toronto; W. G. L. Spaulding, Toronto; C. W. T. Lennox, Toronto; J. S. Chambers, Toronto; Thomas Henderson, Toronto; H. C. Scalding, Toronto; A. E. Webster, Toronto; A. J. McDonagh, Toronto; W. E. Wilmot, Toronto.

Dr. J. L. YOUNG, of Detroit, read a paper on

#### MODERN CROWN- AND BRIDGE-WORK.

The Logan crown (which is familiar to you all) is the strongest and most artistic of any of these supplied us, and is probably used more than all the other porcelain crowns put together, but is open to the serious objection of having to be ground to fit the prepared root, which is no easy task owing to the fixed dowel. This dowel, though well formed, is very liable to bend under the constant

impact of the opposing teeth, as it is pure platinum, and must bear the entire strain, unless the crown is supplied with a band. Where this form of crown is used without a band, more satisfactory results will be obtained by setting with gutta-percha, as the elasticity of this substance tends to prevent bending of the dowel at the juncture of crown and root.

The jacket crown has its place, but is mechanically weak, and should be used only where it is of the utmost importance to leave the pulp alive, or where it is very likely the root will need venting at some future period. With this form of crown it is an easy matter to drill through the lingual aspect of the metal jacket, and thus gain entrance to the pulp-canal. A few words might not be amiss as to the construction of this crown. The tooth is not cut off even with the gum, but, where possible, left two-thirds of its original length, and, if the pulp be alive, as in peg teeth or those badly eroded (and these are about the only teeth having vital pulps that require crowns), the tooth should be left as long as possible. The labial surface is now ground away as much as possible without endangering the pulp, and enough removed from the lingual surface to allow for the metal jacket between it and the opposing teeth, and then the approximal bulges removed, giving it a wedge shape. In removing the labial surface, it is essential to remove all of the enamel at the gingival border, so that the porcelain may extend over the metal jacket and still not be prominent. The band of pure platinum, 28 gauge, for the upper centrals and canines, or 30 gauge for upper laterals and lower incisors, is cut of desired length and width, and the ends beveled on opposite sides, the long ends brought together so as to lap, and soldered with 25 per cent. platinum solder. This is easily done by connecting the tube of the blowpipe to a cylinder of nitrous oxid instead of to the bellows, and, if properly done, gives a joint that will not open up while in the furnace. This method of soldering should always be used in constructing platinum bases for porcelain work. The band is now trimmed to conform to the gingival border, and forced on the tooth so as just to pass beneath the free margin of the gum, and, if the tooth is properly prepared, this will not cause the slightest pain. It is now removed, and the short ends of the band brought together as before, and soldered, giving a ferrule. This is again forced on to the tooth, and with suitable pliers is compressed labio-lingually, so as to fill the space between the approximating teeth, and also to allow the opposing teeth to properly occlude. The ferrule is now trimmed the required length, and a piece of platinum soldered on to form the cap. The labial portion is now ground thin from within a line of the gingival border to the incisal portion, and after the tooth has been shortened a little, it is replaced and the thin metal punctured with a suitable instrument, so as to give lodgment for the porcelain that is to unite the facing and the metal jacket. The object of grinding away some of the tooth after the cap is fitted is to give a chance to form a box, so as to get as much porcelain as possible close to the incisal edge. Where the pulp is alive, and there

is danger of approaching it too closely, the mesial and distal corners may be removed, answering the same purpose. This little box and the holes are now filled with wax, and an impression and bite taken in plaster, which should remove the metal jacket from the tooth. Casts are run up and mounted on the articulator, and a suitable tooth ground two-thirds away, leaving just the labial view. The metal jacket is now removed from the cast, the wax boiled out, and the porcelain body placed in the box and holes, and then biscuited. When cool, more body is added, and the facing tapped to place and fused again. As the pins have been ground away, and the facing is held entirely by the porcelain, it is a good idea to use a little gum tragacanth in the water for mixing the porcelain, as it makes it more adhesive. This second baking, if to be final, should be carried up till the porcelain flows nicely, giving a very artistic crown when finished.

Removable bridge-work, if so constructed as not to work loose, has many advantages over fixed pieces, especially in all porcelain work, in extensive restoration, or where much absorption has taken place. The Griswold removable method seems to offer very promising results, and, if it stands the test, will fill a long-felt want in cases having three or more attachments, and in porcelain work. With this method vulcanite can be used as a base where desired, as the bridge is more easily removed by the wearer for cleansing than a clasp plate.

Another much mooted question is the advisability of removing the pulp from teeth to be fitted with gold caps; and strangely, too, this measure is often championed by the advocates of bands for the anterior teeth. Yet all will admit that to properly remove the pulp and fill the canals in a bicuspid or molar is much more difficult and uncertain than in the six upper anterior teeth. But the question of extreme pain caused by properly shaping a tooth for a gold cap now presents itself in the majority of cases. So of the two evils choose the least; and if the tooth cannot be properly shaped to receive a cap, by all means the pulp should be removed and the canals as thoroughly filled as possible.

Another question of considerable import is, Cleansable spaces *versus* saddles swaged to fit the soft tissues. No doubt the former are preferable, where sufficient room can be left between the dummies and the soft tissues to insure permanent space. In such a case there is no danger of the gums becoming hypertrophied or inflamed, as is often seen under the ordinary bridge, and especially if the teeth are short. In such a case a more cleanly permanent result would be obtained by covering the soft tissues beneath the dummies with a saddle of pure platinum, as any inflammation about the margins of the saddle will tend to act as a barrier to the entrance of particles of food. The same applies in a greater degree to single dummies placed between two abutments, for in all such cases, owing to the impossibility of properly brushing the gums, inflamed soft tissue is a certainty. In all porcelain restoration the saddle is of great value, as it materially strengthens the unfinished piece, and simplifies the construction.



*Discussion.*

Dr. MITCHELL. I am pleased to hear such an eminent man as Dr. Young express such a favorable opinion as to the artistic results obtainable from the proper use of a Logan crown.

A word as to the banding of a Logan crown. I heartily agree with Dr. Young when he said that banded crowns are more responsible for the disrepute of crown- and bridge-work than any other style of crown. The misfitting band, whether it be that of an all-gold cap or of the Richmond crown, has done more to lower the value of crown- and bridge-work in the opinion both of our patients and the profession than any other portion of our work. The dentist who, through carelessness or inability, places in the mouth of his patient a band which produces a shoulder underneath the gum margin, and this shoulder composed of cement, which becomes permeated with stagnant saliva and food particles and frequently results in the loss of the tooth, is as guilty of malpractice as the physician who administers the wrong dose of medicine, and consequently impairs the health of his patient.

The removing of pulp under abutments for bridge-work is a matter which I think must be left entirely to the judgment of the individual dentist.

Dr. J. F. Ross. Dr. Young in his paper makes the statement that the jacket crown is mechanically weak. In my practice I have found it the most reliable crown I know of. It may be that my success with it is due to a different method of construction.

We prepare the tooth to receive the crown by grinding it to a conical shape, obliterating the cervical ridge, and concaving the labial surface sufficiently to receive the porcelain facing used for the case. Fit to the cervical circumference a lap-jointed tube, gauge 30, slightly longer than the tooth and filled out mesially and distally to allow for the festoon of the gum. Grind out the lingual portion of the tube flush with the tooth with a lathe corundum wheel, to this portion fit a back of iridio-platinum plate of same gauge and solder with pure gold. Trim off the surplus of this plate and again fit to the tooth.

The next step is to grind off the labial surface, and if this is carefully done a thin film of platinum will remain, which will prevent the body subsequently added from getting into the tube. Now this jacket is placed upon the tooth and adapted to the surface of the stub by pressure with an old plugger, and the cutting edge clipped off or turned up so that its length will be a little shorter than a veneer to be used. The veneer is then chosen, properly ground and placed in position on the face of the jacket, which has been covered with wet porcelain; after artistic relation with the other teeth has been noted, the jacket is seized with a pair of short tweezers and removed, great care being taken that the facing does not change position. It is then placed on the platinum tray on its side and baked, as often as is necessary, trimmed, and cemented with oxy-phosphate.

The tooth is trimmed in the same way as Dr. Young describes, but instead of leaving as much of the tooth as possible, I remove

as much as possible without injuring the pulp, a straight band being made, leaving it about as long as the tooth was in first place. It is afterward trimmed to conform with the gum line. Instead of compressing it labio-lingually as Dr. Young has done, it is compressed to the tooth mesio-distally.

I am sorry Dr. Young did not give us more on crown work.

OFFICERS.—The balloting resulted as follows: Honorary president, H. R. Abbott, London; president, S. Moyer, Galt; vice-president, E. H. Eidt, Stratford; secretary, G. G. Hume, Toronto; treasurer, H. E. Eaton, Toronto; supervisor of clinics, C. E. Pearson, Toronto; archivist, W. E. Wilmot, Toronto.

## UNION MEETING OF THE MARYLAND STATE DENTAL ASSOCIATION AND THE DISTRICT OF COLUMBIA DENTAL SOCIETY.

(Continued from page 975.)

Dr. W. A. MONTELL, Baltimore, Md., read the following paper:

### AN IMPROVEMENT IN INTERDENTAL SPLINTS.

Gentlemen, it is with a sensation of more than usual diffidence that the essayist begs to present to you a few features in interdental splints, based upon ideas which were to him at least new and original, knowing as he does that there are but few things "new" under the sun, and doubting not that some of those present have already devised a similar structure, but, through that innate modesty which pervades the dental profession, have hidden their lights beneath a bushel measure.

Essig, in the "American Text-book of Prosthetic Dentistry," says: "Interdental splints in conjunction with submental compresses and occipito-mental bandages have been used by surgeons in the treatment of fractured jaws since 1780." But, in spite of their antiquity, the writer has been surprised to find how few medical practitioners, even among surgeons, are familiar with their construction, and how few avail themselves of their manifold and manifest advantages. This must be due to no other cause than the fact that not being in close proximity to members of the dental profession, they make use of such appliances as come to hand most conveniently for immediate treatment.

The advantages of the interdental splint in cases of fracture of the inferior maxilla are almost too numerous to mention, and it would be needless in this assembly, where it is so well understood and appreciated, to enter upon a description of its merits; but, in the hope that a commendation of it may be seen by some general practitioner and that he may give the subject more favorable consideration than in the past, let us here review them for a moment:

(1) Perfect readjustment of the fractured parts with absolute rigidity after placing in position, being held so securely after application of the splint that not the slightest crepitation can be observed.

(2) Cleanliness of the oral cavity, with full and free access for antiseptic treatment of the wound, if compound fracture.

(3) Comfort to the patient by reason of the ease of application and firmness with which it is held in position, yet permitting the natural mobility of the mandible, not confining the patient to liquid food, but enabling him to partake of solids with a very fair ability to masticate the same, the pictures herewith [exhibiting] showing that there can be obtained at least an inch and one-quarter space between the splint and the upper teeth; and last, but not least, the fact that owing to the advantages already enumerated the resolution and union of the parts can be accomplished in a time much shorter than by the usual surgical appliances for the purpose; the writer's experience in five cases giving from twenty-seven to thirty days as the time necessary to retain the splint *in situ*, with the assurance that unless some complication arise the patient will require but little attention beyond the treatment of the oral cavity with antiseptic washes.

These are but the more salient advantages to be obtained, but they should of themselves constitute amply sufficient cause for the more universal adoption of the interdental splint in fractures of the mandible.

The last case presenting to the writer for treatment was that of a colored man, aged thirty-six, who was struck by another in the jaw, fracturing the mandible just anterior to the ramus of the jaw on the left side, the fracture being compound, the mass of bone being broken completely between the second and third molars. The splint was constructed and applied after the lapse of forty-eight hours, and twenty-nine days later was removed and the patient dismissed with apparently perfect union of the parts.

The method of taking the impression was for the operator to adjust the parts with the fingers of both hands, and while retaining them thus in position, for the assistant, holding a towel previously folded into a square of eight or ten inches, filled with plaster, and covered with a sheet of tissue paper to prevent sticking, to take a plaster impression of the external surface of the chin and jaw.

After the setting of the plaster and its removal from position, it is once more applied to place, the parts again adjusted to their natural position, and then, with a suitable impression tray with softened modeling compound, an impression is taken of the teeth, the pressure of the tray containing the wax forcing the jaw into the mold already taken of its external surface, thus giving an accurate mold of the teeth and their proper alignment without the necessity of cutting the plaster model and readjusting to position.

From the mold of the external surface of the jaw a model of the jaw in its normal position is then obtained, and upon this is constructed a vulcanite cover for the entire mandible, cutting out such portions as approach the throat and would interfere in the slightest degree with deglutition. This external splint was found too large for the ordinary vulcanizer, and was made in two pieces, afterward being riveted to the cross-bar through which the wires pass. By the use of this external splint not only is there obtained an absolute rigidity of the parts, but, the support being extended posteriorly to the ramus of the jaw, the jaw is firmly held longi-



tudinally as well as vertically, thus avoiding any possible chance of displacement.

In its construction the internal splint should not extend downward upon the crowns of the teeth more than one-half their depths, thus affording full opportunity to observe the case and the lacerated tissue, if any, in the oral cavity.

The only difficulty the writer encountered in the case was due to the closing up of the external tissue, some slight soreness and excoriation occurring on the twentieth day, which having been anticipated gave but little annoyance, three dustings with Squibb's compound alum powder (consisting of burnt alum, camphor, and carbolic acid) sufficing to allay the discomfort; and upon the removal of the splint on the twenty-ninth day the wound was thoroughly dry and healed.

The writer begs to express his appreciation of the services of Dr. J. H. Ammenheuser, who, by his assistance in the construction of the device, materially aided in the success of the operation.

The writer respectfully submits his experience, with the hope that a more thorough elaboration of his appliance by some more competent practitioner may result in a better and more complete construction of what he deems an improvement upon interdental splints.

#### *Discussion.*

Dr. B. HOLLY SMITH, Baltimore. I am very sorry that I did not hear the whole paper. The appliance seems to be a very ingenious one. One trouble occurs to me in making this appliance and taking the impression,—that there would naturally be more or less swelling and pain in adjusting the parts several times. One main objection to a rigid appliance pressing against the soft parts is that it has a tendency to produce more or less sloughing. I have had some experience along that line myself. It occurred to me that it would be an improvement on this if we could retain the rigidity of the appliance and at the same time make it removable, so that the parts may be antiseptically treated during the healing of the tissues. Certainly the appliance has been very effective in this particular case.

I am proud that a member of my committee has seen fit to present this appliance as a part or indeed the whole of the report of our committee.

Dr. C. J. GRIEVES, Baltimore. I wish to call especial attention to two points. First, the advantage of not having to break and readjust the parts of the model, as in most cases. We all know how difficult it is to keep the parts in position while taking the impression, and this appliance in that particular is a most excellent one. Further, the mandible is absolutely rigid and can be used for mastication, which is not always available in the ordinary splint.

Dr. THOMPSON, Washington. We all recognize the fact that there are two important points to be considered in the making of interdental splints,—first, keeping them in place; second, to be able to keep the parts clean. The appliance as described is very valuable, and I think far ahead of anything I have seen. I would like to

suggest, however, another method of taking impressions. The success of an impression of a fractured jaw lies in getting the broken portions adjusted. In taking impressions of fractured jaws I have found this part very difficult, and in some that I have made I have, so far as I understand it, made some improvement. I make no effort to take an impression of the jaw. I adjust the fractured portions, take an impression of the tops of the teeth, then take a plaster impression of the jaw without adjusting the fractured portions, but letting the parts remain in their broken position. Make plaster casts of these portions, and then saw through at the point of fracture, then adjust the impression to the occluding impression, gotten before. Then instead of taking an impression and making a splint of rubber, I simply take Melotte's metal and flow over the external portion of my model, covering the teeth about half way, making perforations to aid in keeping the parts clean. The remainder of the operation is the same as his, with the exception that instead of a rubber cup for the chin, I make a cup from Genese's preparation, connecting the two as the doctor suggests. In this way you get absolute adjustment of the parts, as well as cleanliness. You can remove it as often as you like to clean the tissues. In this way we also have the advantage of the parts being rigid to aid in masticating, and, having only a portion of the teeth covered, mastication can be accomplished very well. In this connection I would like to call attention to a case I once had. At the time of the collapse of the theater in this city, a patient was brought to me with fractured jaw. The impression was taken and the appliance made as I have described. When I had the appliance ready a physician, representing the theater company, came and told me that he was authorized to take charge of the case, and I was not allowed to put the appliance on. A few days after that I saw the physician, and he told me that the patient was doing nicely. I saw the patient a few months after, and the anterior segment of his jaw was three-quarters of an inch from the other portion, as a result of having been treated by the physician.

Dr. MONTELL. The remarks made by Dr. Smith are thoroughly in accordance with my views in making this appliance. With reference to having an appliance that is movable, I will say that this one can be removed very easily. I removed it several times and treated the parts antiseptically in this case. I removed it eight or ten times during the twenty-nine days I was treating the case. There is no difficulty in constructing the chin-piece in two parts. The chin-piece was cut into two sections, and, after vulcanizing, the line showed very clearly on the vulcanite. They were trimmed and fitted to the model, and then fastened together. With regard to the point of accuracy in the impression, I contend that a more accurate impression can be obtained when the parts are in their proper position than when the model has to be cut and readjusted. I contend that the better the tissues are adjusted, and the more rigidly they are held in position, the more readily will nature carry on the process of healing the fractured parts.

The subject was then passed.

It was announced at this juncture that Dr. E. A. Bryant's paper would be dispensed with for this session, he being absent on account of the death of his mother.

On motion of Dr. Holly Smith, the sympathy of the two societies was extended to Dr. Bryant in his bereavement.

Dr. H. J. ALLEN, of Washington, then read the following paper:

#### A NATIONAL DENTAL CERTIFICATE OF QUALIFICATION.

A study of the evolution of the laws that have been enacted since 1841 for the protection of the dental rights of the people of the several states is, particularly at present, a most interesting one, as the general trend seems now to be toward the nationalization of dental interests.

The time is now ripe for action that will eventually harmonize and bring into closer accord the varying standards and conflicting restrictions which now characterize the dental legislation of the United States. As a harmonizing agent, reciprocity between the states has been discussed for several years, but aside from a grouping of the examining boards of three states for the mutual exchange of courtesies, it has never demonstrated its value except as a subject for discussion. When we all graduate from the same college, when we are all equally honest and intelligent, then will the ideal reciprocity be born without travail.

Inasmuch as any plan of reciprocal dental relations between the states that has yet been broached would involve the material changing of practically all existing dental laws, it would seem more advisable to limit the reciprocity to the three national associations of dental interests now in existence: the National Dental Association, the National Association of Dental Faculties, and the National Association of Dental Examiners.

The suggestion is respectfully made that each association elect three of its most capable and representative members to form a volunteer National Board of Dental Examiners. The men appointed to conduct the examinations should be of such high standing in the profession, both locally and nationally, as to command the respect and confidence of all. To be a member of the board should be the highest honor in the gift of the profession to its best representatives. The remuneration should be sufficient to reasonably compensate for the time involved. A fee of twenty-five dollars from each candidate would probably cover expenses, provided the examinations were held simultaneously with the annual meeting of the associations.

The National Board of Dental Examiners should give an examination (open to all medical and dental graduates whose preliminary educational qualifications are of the requisite standard) equal or superior to the best and strictest given by any state or country, and that can therefore be indorsed by any state board as meeting all their requirements excepting the matter of fees, which could readily be adjusted.

If a few of the states with the highest standards would recognize



the certificates issued by the National Board, the rest with lesser standards must follow or make themselves ridiculous in the estimation of the profession and the thinking public. The certificate issued by the board should entitle the holder to registration in any state whose dental board is a member of the National Association of Dental Examiners (and perhaps in time foreign countries would extend courtesies to the holders of the certificates). In those states where no discretion is allowed on the part of the examiners, short clauses would probably have to be added to some existing laws to allow registration of the certificates, but, as Johnson says, "The law is the last result of human wisdom acting upon human experience for the benefit of the public," and as such it has not been difficult to change in the past, and certainly will not prove so in the future. It could probably be arranged also that the certificate of the National Board of Dental Examiners would be accepted as sufficient evidence of ability to entitle its holder to a position in the army, and perhaps the navy, dental corps without further examination or influence; thus assuring to both branches of the service the very highest standard of dental efficiency.

Of course the vast majority of dental graduates will be perfectly content with a local or state license, but those who have the ability coupled with the laudable ambition to have the official national seal of efficiency placed upon them, will have the freedom of the United States, the possible choice of a position in the army or navy, the possible choice of positions in dental faculties, and will represent, as a class, the highest output of which the dental profession is capable. Not the least among the advantages of the plan will be the possibility of furnishing the best men for the positions where they can do the most good.

Thus a higher and better dental education will be encouraged by the profession putting a premium upon it by the granting of special privileges and advanced professional standing. By this means we could offer inducements for many young men possessed of the highest educational and technical qualifications to enter our profession, with the assurance that ample rewards will speedily repay the best efforts of exceptional merit. Thus, while encouraging the best-equipped men to enter the profession, a long stride would also be taken toward those reciprocal state relations to establish which must ever be a most important mission of the profession until eventually achieved.

I believe the reasons that can be adduced by thought and discussion will prove weighty enough to induce us to consider carefully whether we should not give higher and more substantial recognition to exceptional merit and ability than we, as organizations, have done in the past,—particularly when by so doing we may find a key to the problem of state and perhaps (to a degree) international dental reciprocity. And is not the time at hand when we should consider what steps may be the most advantageous to take?

(To be continued.)

### CALIFORNIA STATE DENTAL ASSOCIATION.

THE thirty-first annual meeting of the California State Dental Association opened at San Francisco on June 10, 1902, and continued for four days with a large attendance, Dr. Barker, of San Jose, in the chair. A very excellent program was furnished.

Dr. John S. Marshall, President of the Examining Board of Army Dental Surgeons, gave a talk embracing the following points: The necessity of dental surgeons in the army is very great. In the last nine months at the Presidio 3452 sittings were given and between five and six thousand operations performed. Three chairs are in continual service from 9 A.M. to 4 P.M., with an hour's intermission at noon. A great many diseases are encountered that are peculiar to the tropical climates, and inflammatory conditions of the mouth which the speaker has not seen before are apparent in the mouths of the returning soldiers from the Philippines. There is an ulcerated condition of the gums and the oral mucous membrane, beginning at the festoons, sweeping in both directions following the gum line and traversing the entire mouth. The teeth become loosened, but there is no other evidence of scorbutic symptoms. Most cases have a great deal of salivary calculus, and, in treating these lesions of the mouth, dysentery and diarrhea are cured in a few weeks that without treating the oral cavity would have required care for months. The government furnishes material for plastic fillings, the patient having to pay for gold. The outfit of the army dental surgeon is as complete as that of any dentist in private practice.

Thursday, June 12th, the Association banqueted at the Cliff House.

#### ELECTION OF OFFICERS.

The following officers were elected for the ensuing year: Frank L. Platt, San Francisco, president; Leander Van Orden, San Francisco, first vice-president; W. J. Taylor, Sacramento, second vice-president; W. A. Knowles, San Francisco, third vice-president; C. E. Post, San Francisco, recording secretary; O. P. Roller, Los Angeles, corresponding secretary; Thos. Iglehart, San Francisco, treasurer.

O. P. ROLLER, *Cor. Sec'y.*

---

### NEW BRUNSWICK DENTAL SOCIETY.

THE annual meeting of the New Brunswick Dental Society was held in Charlottetown, P. E. I., Wednesday, July 9, 1902.

The following officers were elected for the ensuing year: H. E. Belyea, St. John, president; H. W. Murray, Shediac, vice-president; Frank A. Godsoe, St. John, secretary. Members of Council (elected for term of three years)—J. M. Magee, St. John; J. W. Sangster, Sackville; J. W. Moore, St. Stephen; Frank A. Godsoe, St. John.

The next meeting will be held in St. John, on the second Tuesday in July, 1903.

### COUNCIL OF DENTAL SURGEONS OF NEW BRUNSWICK.

At the annual meeting of the Council of Dental Surgeons of New Brunswick, held in July, 1902, the following officers were elected: J. W. Moore, St. Stephen, president; Frank A. Godsoe, St. John, registrar.

The next annual meeting will be held in St. John on the second Tuesday in July, 1903.

---

### NORTHERN IOWA DENTAL SOCIETY.

THE Northern Iowa Dental Society held its eighth annual meeting at Cedar Rapids, Iowa, September 2, 3, and 4, 1902. There were seventy-five dentists in attendance. The following officers were elected for the current year: Wm. Finn, of Cedar Rapids, president; A. W. Beach, Sheldon, vice-president; C. L. Topliff, Decorah, secretary; H. W. Riser, Lansing, treasurer.

The next place of meeting will be Clear Lake, the first week in September, 1903.

A. W. BEACH, *Sec'y pro tem.*

---

### EDITORIAL.

---

#### TO THE DENTAL NOVITIATE—GREETING!

WITH the advent of the coming season of renewed professional activities many hundreds of young men, having terminated their preparatory training, will enter upon the serious study of dentistry as a life-work, and the DENTAL COSMOS asks the privilege of a brief word or two with them at the outset of their professional careers: a word of welcome; a word of encouragement; a word of advice. It is probably true that the vast majority of young men who select dentistry as a profession do so without an adequate idea of the nature of the problem which confronts them in undertaking to make a success of their life-work. The suggestion of a friend; the belief that dentistry offers an easy and respectable means of securing a livelihood; a taste for mechanics, with the ambition to acquire a profession; or that competition is less than in other callings.—are among the general reasons which the novice gives for his choice of dentistry as a calling. The choice is nearly always made without a correct conception of just what is properly included in the term dentistry, or the extent of the training, manual and mental, required to make a successful practitioner. His ideas of dentistry are often but slightly more accurate than those which constitute the general popular conceptions on the same subject, hence at the very outset of his career he is confronted with con-



ditions in the shape of studies which to him seem foreign to the subject because foreign to his conceptions of the dentistry he had in mind. He is disillusioned and perhaps disappointed, but if he has the normal amount of grit and self-reliance, after taking a mental account of stock he sensibly concludes to make the effort to succeed in his undertaking and then settles down to the serious work of his professional study.

No period of his life is a more critical one than that here referred to. The circumstances and conditions are peculiar, and are too frequently disregarded by the casual observer, who takes it as a matter of course that each young man must necessarily go through the transitional period which separates boyish dependence from manly self-reliance, and that the experiences, unpleasant and bitter though they may occasionally be, are to be borne and surmounted with equanimity; that he should "cut his eye-teeth" professionally just as he has already done literally.

To understand our problem is to half solve it; this applies as well to the problems of life as it does to mathematics, and the problem of this critical period in the career of the student is as much the training of those elements of character which go to make up self-reliance as it is a training in the elements of dental professional education. The former precedes and is the foundation of the latter; indeed, the professional training is not possible except by virtue of self-reliance. Let us see in what particulars the cultivation of self-reliance is not only helpful but necessary in the study and practice of dentistry. At the outset the student is in many ways thrown altogether on his own resources in the guidance of his daily life. He is cut off, as a rule, from those home influences which have served to direct him heretofore; his numerous inquiries, which found ready answer from those who at home were his mentors in all weighty matters, are now not met by aid so immediately accessible, and he must think out for himself a thousand and one things which to him are of much importance and which heretofore were resolved for him by others. His judgment is, therefore, actively called into play and he is compelled to do his own thinking.

But old habits are not easily shaken off, and while the lesson of self-reliance in the matter of independent thinking with reference to the ordinary conduct of his life may be readily learned, the practical application of the same principle to professional study is by no means as easily accomplished. The old habit of seeking for ready-made opinions extends usually beyond the home environment, often throughout the school period; it is tenacious, and, if

not replaced by the habit of self-reliance in the matter of thinking and the formation of correct independent judgments, develops not a true student, but merely a memorizer and copyist. The factor of self-reliance will determine the method of study, and make the text-book a means, not an end, in professional education. Text-books are to be used as guides, not to be memorized, but to be read for the light that they shed on the data of nature which they record; and the principles which they set forth are to be mentally standardized by individual observations in the departments of professional work to which they relate. As by experience and observation the judgment is developed and strengthened, then the data which make up the sum of professional education become practically available. The student who memorizes for the purpose of passing examinations does not know his subject; he knows simply a collection of words and phrases about it, which is a far different thing,—for unless what he has learned may be turned to practical account in his professional work, it is of no more use to him than the limited vocabulary of the parrot. As a matter of fact, the similarity between the educational equipment of the student who is a mere memorizer and that of the parrot is by no means overdrawn, for as a prominent dental teacher has well said, "The parrot can talk, it is true, but it can't parse." It is self-reliance in study, expressed as independent thinking, which enables the student to acquire that grasp of his subject-matter which will, figuratively speaking, enable him to "parse" it. To the new matriculate, then, we suggest the cultivation of the habit of intellectual self-reliance as the best help to a successful understanding of the subjects of professional study.

And next a word as to the group of studies which constitute the modern dental curriculum, and which to many students seem unnecessary. Let it be understood that the branches of study which are now the basis of a proper dental education have been chosen and agreed upon by dental teachers not in an arbitrary fashion, but because experience has demonstrated that the public demands from the dentist the kind of service which it is the purpose of the dental curriculum to educate him to render. His success as a practitioner will be in proportion to the thoroughness with which he fits himself to serve the public, and his college course is planned with that object alone. The time has long since passed when the public was satisfied with a dental practitioner whose abilities were practically limited to the extraction of teeth and their replacement by artificial substitutes. The continual growth of knowledge concerning the teeth and the tissues ad-

jacent to them has developed an understanding of their vital relationships with the rest of the body, and has shown that the nutrition and functions of the dental and oral tissues as well as their diseases are intimately related to those of the rest of the organism; hence for the dentist a thorough knowledge of the composition, structure, and functions of the entire body are as needful as to any other practitioner of medical science. It is the possession of such knowledge that constitutes the difference in kind between a dental mechanic and a dental practitioner in the broad sense of that term, just as it constitutes the difference between a physician and a pharmacist.

These are questions which meet the dental student at the beginning of his career and which he must solve for himself, and often by himself, before he can regard himself as fairly on the road to success.

And now a word as to his ideal, the attainment of which will be the measure of his professional success. How shall he meet and overcome the competition which the annual addition to the great body of dental practitioners is constantly increasing? There is but one sure way, and that is to practice upon that plane of high attainment in which competition is relatively the least. The old axiom that there is plenty of room at the top is literally applicable to the practice of dentistry. It is only in the lower ranks of imperfect professional equipment where competition is strong. Let it be the object of the new-comers to strive for a place at the top by absorbing and securing to themselves all the intellectual and manual culture which the college course offers, improve every opportunity to broaden and increase their professional ability, and so fix the habit of observation, study, and practical training that it shall continue throughout professional life, and the attainment of success is assured. What has been already achieved in dentistry is but the reflection of what is to be done; the profession is young, it is scarcely out of its swaddling-clothes as compared with many other departments of scientific inquiry. The field is just opening to the earnest students who are in due time to take the places of those who have already raised our calling to its present status among the professions, and the opportunities for winning success and fame in dentistry were never so great as now to those who are willing to submit themselves to the right preparatory training and make the personal sacrifices necessary to win success. To all such in the great body of incoming students the DENTAL COSMOS bids welcome and God-speed in their endeavors.



## BIBLIOGRAPHICAL.

PROCEEDINGS OF THE THIRD INTERNATIONAL DENTAL CONGRESS, PARIS, 1900. Published by the Secretary General, Dr. E. SAUVEZ, with the collaboration of Dr. ED. PAPOT, and by the Committee of Publication. Volume II: Meetings of the Sections. Seven plates and 28 other illustrations. Paris: *L'Odontologie*, 45 Rue de la Tour-d'Auvergne, 1902.

This volume of 488 pages, constituting the second volume of the transactions of the Third International Dental Congress, contains a record of the meetings of the several sections, which are reported *in extenso*, covering contributions upon pathology, bacteriology, physiology, semeiology, etiology, surgery, operative and prosthetic dentistry, dental education and dental legislation, together with the relations of dentistry to the public health.

The report is an excellent addition to the literature of modern dentistry, both as to the number and character of subjects presented, and especially because of the extent of original scientific research which they, in the main, represent.

In the work accomplished at the Third International Dental Congress, the dental profession of France has achieved a record not only commendable in itself, but one which presents a high standard for future congresses to emulate or excel.

AIDS TO DENTAL ANATOMY AND PHYSIOLOGY. By ARTHUR S. UNDERWOOD, M.R.C.S., L.D.S., Professor of Dental Surgery, King's College, London, etc. Second Edition. London: Baillière, Tindall & Cox. Edinburgh: Thin; Livingstone. Glasgow: Stenhouse. 1902.

This little book of 125 pages is an excellent introduction to the study of the subjects embraced within the scope of its title. We particularly commend the lucid manner in which the principal fundamental ideas are set forth, and the attractive conversational style in which the subject-matter is written. We hear much of dry text-books. The anhydrous character of a text-book, be it remembered, is not necessarily due to the subject under consideration as much as to the manner of its presentation. If a text-book be dry it is the fault of the author and not of his subject. The importance of an attractive presentation of a subject-matter cannot be overestimated, especially in books intended for the beginner.

We mention this point in order to emphasize what appears to us to be one of the most valuable features of the little work under consideration. There is a quality in the style of the presentation of the subject-matter which makes the reader feel at once *en rapport*

with the author, and somehow flatters him with the feeling that the author has taken him into his confidence, and is directing his attention solely to the instruction of the individual reader,—a quality which makes the book most readable, and which will tend to indelibly impress its teachings upon the mind of the student.

NOTES ON MATERIA MEDICA, PHARMACOLOGY, AND THERAPEUTICS, FOR DENTAL STUDENTS AND PRACTITIONERS. By DOUGLAS GABELL, L.R.C.P., M.R.C.S., L.D.S., Assistant Dental Surgeon, Royal Dental Hospital; and HAROLD AUSTIN, M.D., B.S. Lond., L.R.C.P., M.R.C.S., L.D.S., Assistant Dental Surgeon, Royal Dental Hospital, and Lecturer on Materia Medica to the London School of Dental Surgery. London: Claudius Ash & Sons, Ltd., 1902.

The authors state in the preface that "These notes were originally designed for students proceeding to the examination for the L.D.S. Eng., . . . and that the volume does not claim to be a complete treatise upon dental materia medica, nor indeed anything more than an attempt to set down as briefly and in as practical a manner as possible those purposes, actions, and applications of drugs which are of utility to the dental surgeon."

The work seems to be admirably adapted for the purpose for which it was written. The range of medicaments included, with their therapeutics, pharmacology, etc., not only covers very fairly the requirements of the student preparing for examination, but, taken altogether, the treatment of the matters embraced constitutes a study of the subject which will be extremely useful to the dental practitioner as well. We know of no work which in the same compass furnishes so much readily accessible information immediately applicable to the needs of the dental student and practitioner on the subject of dental materia medica and therapeutics.

A number of minor typographical errors should be eliminated from succeeding editions by careful proofreading.

DENTAL QUESTIONS AND ANSWERS ON TEMPERAMENTS. By GUSTAVUS NORTH, A.M., D.D.S. Cedar Rapids, Iowa, 1902.

This little book of twenty-four pages gives a fairly comprehensive view of the salient points of what is known regarding temperaments, especially in their relations to dentistry. The arrangement of the matter in the form of questions and answers places the subject in a convenient and readily accessible form, and one which makes the suggestion to us for a more extended study of the subject. We commend it as a ready-reference book for students and practitioners.

## OBITUARY.

---

DR. S. G. HOLLAND.

DIED, at his residence in Atlanta, Ga., July 13, 1902, in the seventy-second year of his age, SIDNEY G. HOLLAND, D.D.S.

The deceased was one of the pioneer dentists of Atlanta, and one of that city's most prominent citizens. Although he had been in ill health for several years, his death came unexpectedly, from dropsy of the heart.

Dr. Holland was born in Columbia county, Ga., January 5, 1831. As a young man he went to visit relatives in Mississippi, and while there was married to Miss Mary A. Bussey, whose family were prominent citizens of Georgia. Afterward he removed to Texas, but remained in that state for only a short time. On his returning home he stopped *en route* at New Orleans, and there he engaged in the study of dentistry under the preceptorship of a prominent French practitioner of that city. Having thus acquired a knowledge of his professional calling, he opened an office in Augusta, afterward removing, in January, 1874, to Atlanta, in which city he continued his residence and practice as a dentist until the time of his death. He quickly achieved prominence both as a citizen and as a practitioner,—his popularity and his interest in public affairs being such that he was many times solicited to occupy positions of trust and responsibility which, from his modest and retiring disposition, he declined to accept.

From the beginning of his professional career until its close he maintained an active interest in the development of his profession, being one of the organizers of the Georgia State Dental Society and the Southern Dental Association. He was especially active in the organization and establishment of the Southern Dental College of Atlanta.

Dr. Holland was known by a large circle of acquaintances, who were his friends and admirers because of his many charming traits of character. Always bright and cheerful in his disposition, and having a temperament in which the love of humor was a prominent element, his relationships with his friends and those with whom he came in contact were such as to bring him a far-reaching popularity. His social characteristics, coupled with the services which his high professional qualification enabled him to render to his *clientèle*, combined to make him an eminently successful practitioner.

His widow and two sons survive him; one of the latter, Dr. Frank Holland, being a well-known practitioner of dentistry in Atlanta, who was for several years in partnership with his father. Dr. Holland was buried July 15, at Westview Cemetery.

---

## DR. ANDREW M. CALLAHAM.

DIED, at Topeka, Kan., July 13, 1902, ANDREW M. CALLAHAM, D.D.S., aged sixty-two years.

Dr. Callaham was born in Logansport, Cass county, Ind., February 5, 1840. His early education was acquired in the country schools. At the beginning of the Civil War he enlisted in Company E, Twenty-ninth Indiana Volunteers, in which he served his country for nearly four years, the closing twenty months as a prisoner of war in Libby and other Southern prisons. Upon being mustered out of the service he entered the



office of Dr. Louis, of Greenfield, Ohio, as a student of dentistry, subsequently attending the Ohio Dental College, from which he graduated in 1875, immediately thereafter locating at Topeka, Kan., where his strong character and energetic disposition, combined with an old-fashioned courtesy of manner, made him a power not only in his profession, but in the various other fields of life in which he took an active part.

As one of the organizers and charter members of the Kansas State Dental Society, of which he was the president in 1884, he was untiring in his zealous interest in its welfare. He was appointed a member of the State Board of Dental Examiners at its first organization in 1885, and served as its secretary during his entire membership till 1889. He was active in the work of the board, and accomplished much toward freeing the state of irregular practitioners.

A sufferer from asthma for many years, he was finally forced to abandon the active practice of his profession, but his energetic nature would not permit him to be idle, and knowing his sterling worth his fellow citizens elected him to the office of clerk of the district court, in which position he was serving his fourth term at the time of his death.

As an enthusiastic member of the G. A. R. he was well known and much loved by the old soldiers of the state. He was one of the prominent Masons in Kansas, having been made a Mason in Topeka Lodge No. 17 in 1868. He was exalted to the degree of Royal Arch Mason in 1870, and was created a Knight Templar in 1871. He was one of the strongest workers for the establishment of a Masonic home in Kansas, which was established at Wichita. He was grand master when the Grand Lodge adopted his recommendation for the founding of a Masonic home.

Dr. Callahan was married in 1865 to Miss Carrie E. Alderman, of Leesburg, Ohio, who, together with two married daughters and a son, survives him.

---

### DR. FRANKLIN SWAP.

DIED, after an illness of two years, at his home, Boonville, Mo., September 4, 1902, Dr. FRANKLIN SWAP.

Dr. Swap was born in Albany, N. Y., August 19, 1830. In 1848 he moved with his family to Crawford county, Pa. In his youth he learned the trade of cabinet-maker, which he followed for eight years. In 1854, three years after his marriage, he moved, with his family, to Taylor county, Iowa, where, under a preceptor, he acquired a knowledge of the profession of dentistry, which he practiced until 1862, at which time he enlisted in the Union army, serving during the Civil War, and being mustered out with rank of Captain. For a time he was Provost Marshal of the territory comprising central Missouri. At the close of the war he returned to Iowa, but in December, 1865, opened an office in Boonville, Mo., where he practiced his profession until declining health and strength made it necessary for him to desist.

From the time of his advent in Boonville, Dr. Swap became prominent in public affairs. He was secretary of the school board from 1867 to 1880. He was for a time secretary of the Osage Valley and Southern Railway Company. For many years he was registrar of the city of Boonville, and for several terms its mayor, his last term having expired in April of the

present year. He was a charter member of the Golden Gate Lodge 91, K. of P., and one of the oldest members of the Far West Lodge, I. O. O. F. Dr. Swap was one of those men of whom it may be truthfully said "he had no enemies," but was esteemed and respected by all who knew him. With excellent ideas of the duties of citizenship, he was ever ready and willing to render efficient service in forwarding the interests of the community in which he lived. He was married to Miss Mary E. Mitchell, New York, August 2, 1851, by whom he had six children, four of whom, with his widow, survive him. One son, Dr. Charles H. Swap, is a prominent practitioner of dentistry in Boonville.

---

## REVIEW OF CURRENT DENTAL LITERATURE.

---

[*Schweizerische Vierteljahrsschrift für Zahnheilkunde*, Zürich, July, 1902.]  
ON THE ERRONEOUS LOCALIZATION OF PAIN IN DENTAL DISORDERS. BY J. FERRIER.

Dr. Ferrier describes the case of a young man who for a year had suffered from intermittent pain on the left side of the face. The source of the pain was located, according to the patient's opinion, in a large carious cavity upon the masticating surface of the lower left second molar. He had consulted several physicians and dentists, but without obtaining any relief. Lastly, he called upon the writer, to whom the case presented an unusual degree of interest, inasmuch as the competent practitioners whom the patient had consulted had failed to relieve him. He, therefore, studied the case carefully, and was able to locate the true source of the pain as the upper second bicuspid. The patient complained that whenever any warm liquid was taken into the mouth it produced intense pain. Dr. Ferrier upon examination found that the pulp-chamber was largely open, and that the radicular portions of the pulp were alive; and for this reason he came to the conclusion that warm water could not produce pain in that tooth, for, as is well known, warm liquids bring about pain only when the pulp is undergoing decomposition, by the pressure upon the adjacent nerve filaments due to the gases evolved in rapid fermentation. The upper second bicuspid presented a bluish spot upon the anterior border of the masticating surface; this proved to be a very deep cavity, and was immediately treated. The patient began at once to improve. Incidentally, the reporter calls attention to the erroneous localization of pain in the bicuspids or canines due to disturbances in third molars.

[*Archiv für Zahnheilkunde*, Berlin, July, 1902.]

A SIMPLE METHOD OF MAKING ZINC DIES OF MODELS WITH DEEP UNDERCUTS. BY HERMANN MULLER, D.D.S., HAMBURG, GERMANY.

After preparing a plaster model with a high base, the teeth are cut off, and the model is rubbed vigorously with talcum powder and painted over with water-glass. The model is then placed upon a piece of glass and a mixture of plaster, molding sand, and pumice is poured over it. This cap is allowed to dry for twenty-four hours, when it is removed by lightly hammering the model. The pieces of this cap are then set together on moist sand, when the metal is poured into it.

[*La Odontología*, Madrid, July, 1902.]

PROSTHESIS OF THE SKELETON. BY DR. FLORESTAN AGUILAR, PROFESSOR OF ODONTOLOGY, UNIVERSITY OF MADRID.

Dr. Aguilar discusses in particular the method of tissue substitution known under the name of "immediate prosthesis," which consists in replacing the lost part immediately after it is removed by surgical means and before cicatrization of the tissues has taken place. As he states, it is in the region of the face that it has the widest application, inasmuch as it is here that for esthetic and physiological reasons it becomes imperative to preserve the integrity of the tissues. He says that it was Claude Martin who, in 1877, performed the first operation of this kind. The clinical observations of many eminent surgeons have demonstrated the fact that bones tolerate readily the contact with rubber pieces in prosthesis, and the presence within their substance of platinum pins, and that while in some cases failures have been recorded, these are generally traceable to causes independent of the operation proper. He describes two very interesting cases in which the immediate substitution of extensive diseased areas was followed by admirable results.

The first case consisted in the replacement of the body of the mandible. Dr. Aguilar describes the method of constructing this kind of appliance, and states that by the immediate substitution of the removed bone by the artificial mandible the following bad results were obviated: Impossibility of proper mastication; difficulty of deglutition; disturbance of phonation because of involuntary deviations of the tongue and diminution in the size of the mouth; retraction of the tongue; sialorrhea, and deformity of the face.

The second case was that of a woman who lost the vomer and all the soft tissues of the nose with the exception of the alæ and part of the cartilages. This deformity and a congenital hare-lip gave her a very disagreeable and repulsive appearance. As the tertiary manifestations of syphilis had become arrested and treatment had been suspended for some time, the lesions were of a prominent character. The patient presented herself in order to have a rubber nose adapted, but, on account of the character of the lesions described, Dr. Aguilar thought it better to perform an operation the most important features of which consisted in dissecting from the forehead a piece of skin of proper size and shape and grafting it to the freshened edges of the area of destruction, taking it over a platinum framework composed of a vertical and two lateral half-round wire platinum bars of three-tenths of a millimeter in thickness. This wire frame followed the outlines of the nose, the vertical bar occupying, for its upper two-thirds, the median line of the nose; upon its lower third it was curved to constitute the lobule of the nose. The lateral wire bars were made to follow the contour of the alæ of the nose and were soldered to the vertical bar by means of pure gold. After having ascertained upon a plaster cast of the face the size and shape of the skin to be dissected and grafted, the pattern was made and corresponding outlines were marked upon the patient's forehead by means of tincture of iodine.

The field of operation was carefully washed with antiseptic solutions, and after tamponing the posterior nasal fossa the administration of chloroform was begun, and the patient was kept under perfect anesthesia by means of intermittent inhalations whenever it was possible to do so in the course of the operation. The edges of the wound were freshened, the surfaces exposed, and holes were drilled into the bone tissue to support the platinum framework. The drilling was accomplished by means of a trephine adapted to a dental engine, as by this means it is possible to obtain perfectly smooth and regular holes. Platinum pins were inserted into the holes in order to be able to ascertain the location of the latter notwithstanding any hemorrhage



that might occur during the intervention. The apparatus was placed and adjusted, and the skin was grafted over it. A very simple dressing was made of iodoform gauze and absorbent cotton, and the skin of the forehead was substituted by skin-grafts from the arm; these took very well, the wound healing completely within a very short time. Two months after the performance of the operation the wounds had healed and the patient presented a very much improved appearance. She could also talk quite plainly, owing to an obturator which closed the congenital palatal cleft.

The paper is amply illustrated, showing the appearance of the patient both before and after the operation just described, and the appliances and devices that were used by Dr. Aguilar.

Incidentally attention is called to some of the admirable operations of immediate prosthesis performed by Dr. Michaels, of Paris, descriptions of which have appeared at various times in the pages of the DENTAL COSMOS.

[*Journal of the British Dental Association*, London, August, 1902.]

**PALATAL PARALYSIS.** BY DR. S. ERBEN, ASSISTANT PROFESSOR AT THE UNIVERSITY OF VIENNA.

The author remarks that this case of palatal paralysis will best illustrate the care necessary for the diagnosis of paralysis in the neighborhood of the buccal cavity. The patient, a man aged twenty-seven, enjoyed perfect health until three weeks previous to the time of observation, when he was attacked with fever and general prostration. Ten days later he had so far recovered that he could return to work, but about a fortnight afterward observed that he could not swallow as well as usual, every effort being followed by regurgitation through the nose or by a flowing back into the mouth. There was no hoarseness or cough, and the tongue and lips were intact, while speech was perfect. The mucous membrane of the throat and mouth was pale, and no inflammation could be observed anywhere, while the tonsils were barely visible. Nowhere was there any white deposit, and no adenoid growth could be observed in the posterior surface of the fauces, but the uvula was asymmetric, and the palato-glossal and palato-pharyngeal arches were distinctly deviated toward the left side, while only the anterior arch could be seen on the right side, as the former quite covered the latter. From this asymmetry, unilateral paralysis of the palate was diagnosed, and after three weeks' treatment deglutition could be performed freely, the different structures having regained their normal condition. The report of the case appeared originally in the *Medical Press and Circular*.

[*Dominion Dental Journal*, Toronto, Canada, August, 1902.]

**TREATMENT OF ALVEOLAR ABSCESS BY EXTRACTION AND REPLANTATION.** BY J. H. McCULLOCH, PERTH, ONT.

The author recommends that the mouth be sterilized before extracting the tooth, and that immediately after the extraction the tooth should be placed into a 1 : 1000 solution of mercury bichlorid and left there until ready for replantation. The alveolus should then be packed with cotton, saturated in an antiseptic, and the pus sac removed from the apex of the root. The cementum, if vital, should be left undisturbed, but if signs of disorganization can be observed, the affected areas should be carefully removed. The pulp-canal should then be opened from the apex, the pulp removed, and the canal filled with twenty-five per cent. solution of pyrozone, which is allowed to remain for a short time. The walls of the alveolus should then be scraped to remove any disorganized tissue that may be present, washed with three per cent. pyrozone, and packed with cotton saturated in campho-phénique. The apex is then polished, the canal filled, and the tooth replaced and retained in position by means of a suitable retaining appliance until consolidation has taken place.

[*Dental Summary*, Toledo, September, 1902.]

## THE TECHNIC OF APPLYING CATAPHORESIS SUCCESSFULLY.

BY WESTON A. PRICE, D.D.S., CLEVELAND, OHIO.

The writer believes that practically every failure to produce anesthesia in tooth-structure with cocain hydrochlorid by means of cataphoresis has been due to one of the following reasons: (1) The current not going through the part to be anesthetized (having to do with the insulation). (2) The application itself producing pain (having to do with the controller and method of applying). (3) The electro-chemical arrangement being wrong (by reversed current, faulty solution in cavity, soluble electrode, etc.). (4) The tissues being immune to the action of the anesthetic (either true immunity or degenerated or suppurating pulp-tissue).

The first and second of these are the most common causes of failure. Dr. Price remarks that the electric current invariably seeks the path of least resistance, and that the great majority of operators have not realized the fact that the resistance from the tooth they wish to anesthetize is tens of thousands, if not hundreds of thousands, of ohms, while that of the gums between the moist rubber and the tooth is only a few ohms, and that, therefore, to make the current go through the teeth, the resistance through other possible paths should be literally millions of ohms, and usually this can only be accomplished by applying some good non-conductor, such as chloro-percha, gutta-percha, rubber, cement, sandarac, etc.

More failures have been caused from faulty apparatus than from anything else. The tissue through which the current is to pass, being extremely sensitive, responds with pain to a sudden increase of the current of only one-millionth of that required to ring an ordinary door-bell. A satisfactory cataphoric outfit must therefore allow the current to be increased in steps of less than the above figure, but the majority of outfits available increase the current in steps which are hundreds, and sometimes thousands, of times too great. If the current passing through the tooth is increased gradually it will produce a mild sensation, otherwise a sharp pain will be the result.

In making the application, he recommends that all resistance should be turned in and the circuit opened preferably by having no cells turned in. All the neighboring tissues should be insulated by means of chloro-percha or gutta-percha, so that the current should flow only through the tissues to be anesthetized. It should be remembered that enamel is the only structure of the tooth that the current will not flow through more or less easily. If the cavity to be anesthetized is without sufficient retaining form to hold a pledget of cotton, as buccal cavities often are, a wall of gutta-percha should be built. All food débris and decay should be removed, because cocain will pass almost as slowly through it as through dentin. The electrode should not be held in the tooth by the operator, but instead a flexible fine platinum wire electrode, the end of which is rolled with cotton, should be packed into the cavity. The author insists upon the use of a platinum electrode, and says that the operator should see to it that the negative electrode, preferably a sponge, has plenty of surface, and is placed where it will not be disturbed, else it becomes a source of shock by carrying contact. To prevent the positive electrode from being disturbed, it should be passed under the rubber cloth holder before being attached to the connecting cord. The current should be turned on very carefully, starting with one cell and turning out the resistance gradually until it is all out, or until the patients feel a slight sensation like a very mild warmth or cold, as the sensation may seem to them. If this point be not reached with one cell, all the resistance is again turned in, another cell is added, and the circuit is again gradually opened. The point to which the author calls special attention is in reference to the very gradual increase in current to avoid unnecessary shock or pain. He

recommends that in order to save as much time as possible the operator should arrange calls in such a way that another operation can be performed while the cataphoric application is being made. In this way the only drawback to cataphoresis, *i.e.* the time required, is considerably lessened. The current should be increased every three or five minutes, always retreating about the one-millionth part of an ampère whenever the patient feels the slightest sensation.

He then suggests means of insulating difficult cases, such as cervical and approximal cavities, and says that since the current takes the path of least resistance, the part of the cavity toward the pulp will be the first anesthetized, and the other parts, as dentin beneath the enamel of the occlusal surface, the last. Cases of erosion are usually difficult both because of high resistance and because of the cavities being saucer-shaped. To anesthetize these cavities he places a piece of dry cotton on the surface and flows cement over it. He then punctures the cement to the cotton, flows in the cocain solution, and packs into the opening a flexible positive electrode. He uses a concentrated solution of cocain, and when making an extended operation adds a little fresh distilled water about every twenty minutes to keep the cotton from drying out, from warmth and from electric chemical action. When operating on two cavities at once, frequently one will be perfectly anesthetized and the other not. This is usually due to the fact that one tooth has a very much lower resistance than the other, thus allowing more current to pass. Dr. Price says that one of the greatest requisites for success is to be able to recognize faulty insulation or leakage of the current. This is impossible without a good millammeter, one that can easily mark hundredths of thousandths of an ampère. The pain produced by too much current is usually at the apical foramen and is generally a sensation of heat. Never more than three- or four-tenths of a milliampère of current should be used if the operator expects the pulp to be kept alive. This amount is perfectly safe, but twice this amount will certainly produce evil results. If the pulp is expected to be removed one milliampère can be safely used, but not more, as this may bring about inflammation at the apex.

He then suggests that with a satisfactory outfit, properly managed, it is practically impossible for shock to be produced, and concludes his communication by giving a formula for ascertaining the amount of heat generated by an electric current.

[*Journal of the British Dental Association*, London, August, 1902.]

NOTES ON A CASE OF AN UNERUPTED SECOND MOLAR IN A PATIENT AGED FIFTY-SIX. BY HENRY A. E. CANNING, L.D.S., ENGLAND.

The writer reports the case of a lady, aged fifty-six, who had suffered from several attacks of influenza two years previous to the date of consultation. After the last attack she noticed that her face was swollen and sometimes painful. She continued in this way for a year, and at the time of her visit to Mr. Canning presented the following symptoms: General depression, deafness of the affected side, pain in the neck on walking, neuralgic pains in the head, more especially in the temporal region, tenderness over the malar bone, with slight edema, accompanied by a sense of fullness, especially when lying on the affected side, disagreeable taste and smell, and constant discharge into the mouth. Although she had only one or two incisors remaining, she had never had a tooth extracted, all her teeth having loosened and dropped out spontaneously. After a careful examination by Mr. Canning, in consultation with Mr. Symonds, the diagnosis of an unerupted tooth was arrived at. This was removed with great difficulty, and since then the patient's health has greatly improved.



[*Archiv für Zahnheilkunde*, Berlin, July, 1902.]

PYORRHEA ALVEOLARIS, ITS CAUSES AND TREATMENT. By E. J. WETZEL, D.M.D., MÜHLHAUSEN.

The writer states that this disease appears in two distinct forms; first, when it commences at the apex of the roots without pus-formation, and second, when it begins at the gingival border with pus-formation.

He discusses the etiology of these two forms from his own viewpoint, and advises a course of treatment, the most important features of which consist in thoroughly washing the oral cavity with a three per cent. solution of hydrogen dioxid, or with a 2 : 1000 solution of mercury bichlorid. He instructs his patients to exercise pressure upon the teeth and jaws by masticating food thoroughly. A soft diet should be avoided, as it prevents the teeth from proper exercise. Stale bread, without butter or any lubricant, is the kind of food recommended by Dr. Wetzel, in order that the teeth should have an opportunity to do hard work. At the beginning of the treatment, the teeth should be examined at least twice a week, and at each sitting the gums should be massaged with  $H_2O_2$ , and should be painted with a combination of tincture of iodine two-thirds and zinc chlorid one-third. If the foregoing treatment be carefully followed, a great improvement is observed within four or six weeks.

In the second form of the disease, in which pus pockets are present, treatment is generally more successful. This consists in the removal of the local irritants, an operation which the author says cannot be accomplished in one sitting, and that at each succeeding one the roots should be carefully probed in order to make sure that all deposits have been removed. The pockets should then be washed out thoroughly with three per cent. solution of  $H_2O_2$ , or with mercury bichlorid, in 2 : 1000 solution. The patient should be advised to brush the gums and teeth vigorously twice a day. The writer remarks that it is a wise procedure to wait four or five days between the first and subsequent sittings, in order that the healing of the gums should not be interfered with. At every sitting he applies to the pockets a mixture of tincture of iodine two-thirds, and zinc chlorid one-third. If the suppuration continues notwithstanding the complete removal of calcareous deposits, he applies formalin instead of tincture of iodine.

In cases where a palatal root of the upper first or second molars is particularly diseased, he removes this root by means of a cross-cut fissure bur.

After a complete cure has been established, patients should be examined once a month and the gums treated with the iodine solution already mentioned. This course of treatment is, according to the author, one which produces most satisfactory results.

[*L'Odontologie*, Paris, July 30, 1902.]

THE USE OF EXTRACT OF SUPRARENAL CAPSULES, PARTICULARLY AS APPLIED TO DENTISTRY. By DR. E. SAUVEZ, PROFESSOR AT THE ECOLE DENTAIRE.

The writer refers to the importance of securing prompt hemostasis, and says that the aqueous extract of suprarenal capsules is an admirable agent for this purpose, locally, as well as internally. As clinical experiments have shown that this agent is a powerful vaso-constrictor, the writer is of the opinion that before long the use of suprarenal extract will be widely accepted. Incidentally he calls attention to the function of the suprarenal capsule, stating that this consists in the destruction of the toxic products of the disassimilation of the nervous system, such as neurin, which is found in the urine of patients suffering from Addison's disease. It also destroys the products of muscular disintegration, as well as the decomposed pigments of the blood, and in a general way the products of disassimilation. While this antitoxic

function of the suprarenal capsule presents features of marked interest, yet its powerful vaso-constrictor action deserves even more attention from the practitioner. Its action upon the blood-vascular system has been studied and observed by Schymonowitz and Cybulski in Austria, and by Oliver and Schaffer in England. They have observed that it brings about a marked increase in blood pressure, this being concomitant with a decrease in the number of pulsations. It was thought at first that the action was due to a contraction of the peripheral vessels by the intermediary of the vaso-motor centers, but Gottlieb has shown that the extract acts particularly upon the heart and peripheral vessels, as its effects are evident even when paralysis of the vaso-motor centers is induced by hypnotic agents. The observations of Gottlieb show that the extract acts upon the intracardiac ganglia, and it can be presumed that the vaso-constrictor action upon smaller vessels is brought about by means of the lymphatics of the vascular walls and by the vaso-motors.

It is this action, the author says, that has been utilized in ophthalmology and oto-rhinology, and as a matter of fact, in all cases in which it is desired to bring about vascular constriction upon a limited area. This agent was used in ophthalmology for the first time in the United States by Bates, in 1896, and a short time after by Doe and Darrier in France. One drop of a one per cent. solution in distilled water, applied to the normal ocular and palpebral conjunctiva, brings about in two or three minutes an intense anemia of the entire surface of the conjunctiva, the sclerotic coat becoming completely blanched. The ischemia continues during a period which varies according to the amount of the drug used. The application does not produce any irritation at all. A sensation of cold, accompanied sometimes by slight pupillary action, is the only phenomenon which is likely to occur. The author refers to several other writings regarding the use of this agent in ophthalmology and oto-rhinology, and points out the interesting fact that the application of the suprarenal extract is important in cases in which it is desired to produce with cocain local anesthesia of a congested surface. As is well known, cocain will not produce anesthesia in an inflamed area, but its action takes place at once when the congestion is previously relieved by means of the suprarenal extract.

He then refers to its application, and quotes the observations of Brunet, Sorneys, Bates, Douglas, Warren, Swain, Murphy, and others, who have successfully used it in different disturbances of the nasal cavity. Regarding the possibility of secondary hemorrhage, which may follow the application of too powerful vaso-constrictors, the author quotes Dr. Lermoyez, who is of the opinion that this occurrence is not to be feared with the agent under discussion.

The observations of Dr. Peters are quoted, he having successfully used the extract in cases of malignant neoplasms. Daily applications in the morning and evening relieved the intense pain, the patient being able to regain lost sleep. In a case of cancer of the esophagus the patient was materially relieved by the injection of the drug. The essayist then describes several cases of persistent hemorrhage which were arrested only after the application of suprarenal extract. Its use proves beneficial in both external and internal hemorrhages, and it can be used either locally or through the mouth.

From all these observations it can be readily seen, as the author says, that suprarenal extract is a powerful hemostatic, deserving a place in dental therapeutics. It can be used to arrest hemorrhages following extractions and pulp-extirpation, also gingival hemorrhages. The preparations of this drug used in therapeutics vary, according to whether they are to be employed hypodermically, externally, or internally. He describes the preparation for hypodermic purposes according to the method devised by Brown-



Séquard and d'Arsonval, which consists in macerating the capsules in glycerized water, filtering it under carbon dioxid pressure in a d'Arsonval apparatus, and preserving it in hermetically sealed bottles. For internal administration the glands are crushed and dried at a low temperature and made into pills, each containing one and one-half grains of the powder. An aqueous solution is prepared by the maceration of the capsules in cold sterilized water for four days, the maceration then being continued for twelve hours by the aid of slight heat; it is then filtered and evaporated in a vacuum. The product thus obtained is redissolved in sterilized water containing one per cent. formaldehyd.

The author then quotes extensively from the writings of G. W. Watson, and also from those of E. A. Peters, who has pointed out the advantages of using suprarenal extract as a hemostatic, as an adjunct to local anesthetics, and to diminish the pain incident to inflammatory conditions. A solution containing twenty-five per cent. of suprarenal extract and seventy-five per cent. of serum gives the typical suprarenal reaction when only five drops are injected in the forearm. In cases of hemorrhage following tooth-extraction, the author recommends the packing of the alveolus with cotton saturated in this solution. In those cases in which operations are to be performed upon hemophilic patients, he advises that the solution be applied upon the field of operation. It is also used successfully in connection with the filling of cervical cavities. In cases of this sort it can be used at the beginning of the operation to prevent the leaking through the rubber dam of blood from a lacerated gum, or in the course of a filling if the case should require it. When it becomes necessary to bring about a retraction of the gum-tissues to permit of the filling of an approximal cavity, an application of suprarenal extract is called for, inasmuch as it contracts the gum tissue and prevents gingival hemorrhage. In hemorrhage of the pulp, of whatever origin, its use is also indicated. In inflammation of the gums it can be readily seen that the vaso-constrictor properties of this agent makes it an exceedingly valuable application.

The writer then refers to the advantages to be derived from the use of the extract in connection with local anesthesia, either with cocain or through refrigeration, and concludes his report by recommending the adoption of the agent in dental practice.

[*Trans. of the Odontological Society of Great Britain*, London, June, 1902.]

SOME EFFECTS OF THE REFINEMENT OF FOOD. BY J. SIMS WALLACE, M.D., D.Sc., L.D.S.

The author says that "at present there are several different dietetic theories regarding the cause of the prevalence of dental caries," but that one element is common to all,—namely, that the change brought about by modern processes for preparing and refining food is answerable for the prevalence of the disease. Concerning the generally accepted theory that the prevalence of dental caries is due in part to the removal of the husk from the grain and to the refinement of foods, the author says that if we maintain the elimination of the coarse and fibrous elements to be injurious to the teeth, we are bound to consider whether the supposed advantages gained for the stomach and economy in general by such refinement are of more importance than the deleterious effect upon the teeth. With this purpose in view, the author studies this question philosophically and physiologically, and brings forward strong arguments in support of his belief that the teeth and the stomach require similar kinds of food. With reference to the digestive powers of civilized man as compared with his early progenitors, the author states that since it has been ascertained that acquired characters are not transmitted, we must conclude that civilized man should have just as excellent digestive



apparatus as uncivilized man or his progenitors. Discussing the question from a physiological viewpoint, he remarks that food must contain a certain amount of proteids, carbohydrates, hydrocarbons, salts, and water, and what is most important, a certain and considerable amount of *indigestible, innutritious and unabsorbable* matter. Further, he states that this innutritious matter stimulates peristaltic action of the stomach and intestines and thereby induces continuous, regular, and rhythmical performance of their natural functions. He discusses systematically the different kinds of food that constitute our diet, and points out the faults resulting from their ingestion in a refined state. He views these questions from their more important aspects, and invariably arrives at the same conclusion, namely, that food in a refined state is detrimental to health. However, he admits of the use of food in a very easily digested or even predigested form in case of debility, whether general or whether localized in the digestive organs. The essayist insists upon the advisability of including innutritious matter in our daily diet, because, as already stated, it stimulates the peristaltic movements, and also because, as he states in the beginning of his communication, many cases of chronic dyspepsia are due to the want of sufficient movement of the stomach and intestines, and the stimulus of the coarse and fibrous diet would, in the early stages, presumably avert the disease.

With reference to children's diet he says that up to the time of the cutting of the incisors it should be solely of milk, and that the most difficult and perplexing period, so far as the selection of diet is concerned, is between the cutting of the lower incisors and the appearance of the temporary molars. During this period the child should be given succulent food which it can pierce with its incisors, especially with the lower ones, and should suck the juices from such food, which should not, however, contain much inert and innutritious matter. He then states that with the advent of the temporary molars, solid food should be given, and closes his communication by giving the following important points as guides in the feeding of children: (1) A knowledge of the natural foodstuffs which have in past ages been habitually given to children. (2) Knowledge of the artificial foods which are generally used, together with a knowledge of their defects, physical and chemical. (3) A recognition of the likes and dislikes of the child with regard to natural foods. (4) To introduce only one new foodstuff into the dietary of the child at once, and to make sure that this agrees with him before making further alteration. (5) To increase the intervals between meals according to the length of time required for digestion in the stomach; this attention is to be regulated by previous knowledge, the appetite of the child, and the needs of civilization, *i.e.* regularity of meals, and ultimately three meals daily.

[*L'Odontologie*, Paris, August 15, 1902.]

## THE MAKING OF MODELS ACCORDING TO A NEW METHOD.

By P. POINSOT, PARIS, FRANCE.

Dr. Poinsot takes the impression of the mouth with plaster. After removing it from the mouth, and after adjusting all the pieces in the tray, the impression is varnished with a solution composed of 100 parts of acetone and 1 part of celluloid. This coating, which is then permitted to evaporate, leaves a delicate film, which fills and covers up all the porosities of the plaster surface. The surface should be perfectly smooth in order that the next coatings, of the following solution, should adhere to all the parts to be reproduced: Chloroform, 80 gm.; toluene and carbon disulfid, of each, 10 gm.; dental rubber sufficient quantity to make a creamy paste. This solution should be applied by means of a broach, made by winding cotton fibers around the extremity of an appropriate handle. The operator applies as

many coatings as are necessary to obtain the desired thickness. Furthermore, the thickness of the model can be increased by the addition of strips, or pieces of heated rubber, applied by means of a spatula. The next step consists in covering the whole with plaster and vulcanizing it in the ordinary way. It is then removed from the flask, freed from adhering plaster, and mounted upon a plaster base. The author claims that by means of this method perfect models of vulcanized rubber are obtained, upon which the most accurate prosthetic pieces may be constructed.

[While it is probable that a model made by the above-described method presents all the details of the original, yet it cannot represent an exact facsimile of the plaster cast, inasmuch as during the process of vulcanization the rubber contracts, a condition which the author does not take into consideration.—ED.]

---

## PERISCOPE.

---

**For Foul Breath.**—A few drops of the following in a tumbler of water: Saccharin. gr. xv, soda. bicarb. gr. xv, acid. salicylic. ℥j, sp. vin. rect. ℥vjss. Misce.—*Exchange*.

**Reducing the Strength of an Acid.**—In reducing the strength of an acid by water, the acid should be poured into the water, not the water into the acid, and the mixture should be stirred during the pouring.—*Exchange*.

**Irrigation of Wounds or Large Cavities.**—To irrigate wounds or large cavities it is always best to employ solutions at, or slightly above, the temperature of the body, as cold appears to interfere with the reparative action of injured tissues.—*Internat. Journ. of Surgery*.

**Fill Solidly the Retaining Parts of Cavities.**—When introducing a gold filling into a cavity, where it has to withstand the stress of mastication and occlusion, I find that the gold must be built solidly into the retaining form, and in all cases should be constructed of cohesive gold to secure the best results.—CHARLES H. WARBOYS, *Dental Register*.

**The Action of Alcohol.**—Valentino (*Revue de Médecine*) has shown that the toxic effects of alcohol are due in part to its dehydrating power, as previously asserted by Dubois. The staggering gait is found to be due to the toxic power of alcohol proper; the coma is due to the absorption of water from the nerve tissues.—*Modern Medicine*.

**Obligations of Operator to Patient.**—Progress in dentistry tends to further advances along lines other than those of manipulative ability, and necessarily calls for a keener appreciation of the obligations of operator to patient than we see ordinarily displayed when this profession is practiced as a mechanical art.—F. W. KNOWLTON, *Dental Summary*.

**Rhythmical Subluxations of the Lower Jaw to Prevent Chloroform Syncope.**—C. Valéry (*Gaz. des Hôpitaux*) recommends at regular intervals throughout narcosis the pulling of the lower jaw forward and upward. If this be done, and the light reflex be not abolished, there is no danger. The method insures regular breathing and helps to remove any mucous collection.—*Treatment*.

**The Water of Pagliari.**—This is a preparation much employed in France as a hemostatic in hemorrhages accessible from without, as in the skin, the mucous membranes, nose, mouth, etc. Professor Gilbert (*Journ. de Méd. interne*, August 1, 1902) gives the formula as follows: Crystallized alum, 10 gm. (150 gr.); gum benzoin, 5 gm. (75 gr.); distilled water, 100 gm. (3 oz.) M.—*New York Medical Journal*.

**Potassium Permanganate and Thymol Lotion.**—Professor Gilbert (*Journ. de Méd. interne*, August 1, 1902) recommends the combination of thymol with potassium permanganate in antiseptic lotions, especially when used as local applications in cases of viper bite. He gives the following formula: Potassium permanganate, 10 gm. (150 gr.); thymol, 5 gm. (75 gr.); distilled water, 1 liter (34 oz.). M.—*New York Medical Journal*.

**Painless Extraction of Teeth in Children.**—When it is necessary to extract a tooth for a little child, or to perform any brief operation in which much pain will be inflicted, ethyl bromid,—a general anesthetic,—may be administered to excellent advantage. The anesthetic influence of this agent is usually manifested a few seconds after the beginning of inhalation, and lasts from one and a half to three minutes after removal of the drug.—A. H. PECK, *Dental Review*.

#### **An Antiseptic Mouth-wash for Infants.**

Take—Oil of peppermint, ℥xxx;  
Oil of cloves,  
Oil of gaultheria, āā ℥xv;  
Glycerin, ℥ss;  
Distilled water, enough to make ℥iij. M.

—DR. J. H. MCKEE, *Phila. Med. Journ.*

**Overwork in the Dental Office.**—Dentistry properly followed is not an unhealthy occupation. The sanitary conditions of the office must be carefully guarded, and then the individual should, with equal care, guard himself. He should never allow the temptation to overwork to dominate him. Many in the memory of the writer have filled early graves because of the insane desire to cut the hours of sleep and make the day of work from fifteen to twenty hours long.—JAMES TRUMAN, *International Dental Journal*.

**The Mouth a Suitable Breeding-Focus for Bacteria.**—The mouth presents every facility for the multiplication of bacteria, such as heat, oxygen, moisture, nourishment, absence of light, and secure places for hiding. But, upon the other hand, this cavity has a few disadvantages as a breeding-place: First, the majority of the substances that enter the mouth are sterile, because they consist of well-cooked food; and secondly, the natural defense against invasion and penetration of microbes as exercised by the mucous membrane that lines the mouth.—JUSTIN DE LISLE, *International Dental Journal*.

**Porcelain Inlays in Deep Cavities.**—In those extensive cavities where decay has so encroached upon the pulp that its death would almost surely follow if the tooth were filled with a metallic filling, although the cavity be lined with the best non-conductor you know of, porcelain will give one almost absolute security; the pulp will remain alive and the tooth comfortable. Clinical experience has taught us that porcelain is the best non-conductor of thermal changes, and practically restores the tooth to as nearly normal a condition as though decay had never occurred.—W. T. REEVES, *Dental Register*.



**Antral Disturbances.**—My experience with antral disease is that where the infection is due to abscess of the teeth *per se* the cases are of short duration, unless there is carious bone. The mere extraction of a carious root might possibly effect a recovery, unless there were complications. But there may be a corresponding infection of the ethmoidal and frontal sinuses from secondary infection of the antrum from a carious root. When we have that condition it is serious and complicated, and it may become necessary for us to consult a rhinologist.—C. E. BENTLEY, *Dental Review*.

**Gums and Teeth in Diabetes.**—E. S. Talbot states that the gums and teeth are very early affected in diabetes. The alveolar process, being a transitory structure, readily yields to any toxemic state. As the arteries terminate at the base of the teeth, they readily decay. The vinous odor of diabetes may occur in the mouth long before other conditions are evident. The early shrinkage of the alveolar process and gums at the outset of diabetes and of diabetic coma was pointed out by Tyson two decades ago. The condition of the gums antecedent to toxemic states deserves further study.—*Medical News*.

**Filling Materials for Deciduous Teeth.**—In filling deciduous teeth, the question often arises, What material shall we use to give the greatest service? In my experience I have found that each case required a thoughtful consideration, and no one material can be made a basis. In the posterior teeth where the nerve is protected, and retaining forms can be secured, amalgam seems to give the best service, as it is more lasting and quite easy to put into the cavity. Where amalgam cannot be used, gutta-percha takes its place, as this can be used without a great deal of excavating.—F. E. RENKENBERGER, *Dental Summary*.

**Vitality of Enamel.**—The vitality of tooth-enamel is again a subject of discussion, and appears to be gaining advocates. But a short time ago opinion on this subject was decidedly negative. A closer study of the minute anatomy of the enamel and dentin, the relations of their fibers to each other, together with the logical inferences derived from clinical experience, is responsible for this change. When one realizes the fact that enamel is not wholly a composition of inert salts, he becomes conscious that it, like other organized structures, has its physiological and pathological manifestations, however slight or obscure they may seem.—J. L. ASAY, *Pacific Dental Gazette*.

**Turpentine as an Antiseptic.**—According to the *Medical Record*, glycerinated turpentine may be used with success as an antiseptic in the treatment of wounds. Dr. Kossobudsk fills a sterilized bottle with glycerin and adds a small quantity of turpentine. This should be well shaken and allowed to stand for two days. Then he adds a small quantity of five per cent. solution of hydrogen dioxid. It is then ready for use. As an antiseptic it checks excessive secretion when applied to wounds, relieves pain and swelling, and promotes the healing process. This action is thought to be due probably to the oxygen liberated, and partly to the properties of the turpentine.—*Charlotte Medical Journal*.

**Antiseptic Value of Dionin.**—In *La Clinique Ophthalmologique* for June is a short note by Dr. Wigenroth on the antiseptic value of dionin. He was treating a case of purulent ophthalmia in a baby, due apparently to some organisms other than the gonococcus. On this account, probably, treatment by protargol and corrosive sublimate produced little effect. He

therefore ordered the instillation of drops containing two per cent. of dionin and 0.01 per cent. of mercury cyanid. In three days all discharge ceased, and no micro-organism could be found in the conjunctiva. He thinks, with Darier, that this result is due partly to the tears, partly to the lavage of the subconjunctival tissue by the lymph.—*Treatment.*

**Abscesses in Deciduous Teeth.**—It is not always possible to successfully deal with abscesses in connection with deciduous teeth. If the roots of the teeth are not well resorbed, so that much bone will form over the oncoming permanent teeth, deciduous teeth in connection with which abscesses have developed should not be extracted until all efforts to cure the abscess have failed. If the roots of deciduous teeth are two-thirds or even one-half resorbed, so that there will not be much bone-formation over the permanent teeth, and not much danger of contraction of the jaw and a consequent irregular condition of the permanent teeth, extraction of the deciduous teeth thus afflicted is, in my judgment, justifiable.—A. H. PECK, *Dental Review*.

**Prosthetic Use of Paraffin.**—The use of subcutaneous injections of paraffin must be pronounced a great advantage in surgery, as many disfiguring deformities now easily permit of correction. Yet there are certain risks connected with large amounts, the chief of which are pulmonary embolism and the development of toxic symptoms. By removing the syringe from the needle to see if it has struck a vein, the danger of the former accident cannot be obviated. F. Neumann (*Prag. med. Woch.*, June, 26, 1902) points out another fatality which may occur, namely, infection in cavities which are not entirely clean. These will be especially encountered in dental surgery, and whenever he has occasion to fill a cavity or dental cyst, this author always takes the precaution to add a disinfectant to the paraffin.—*Medical News*.

**Importance of Keeping the Mouth in a Healthy Condition.**—A distinguished specialist asserts that loss of appetite, nausea, and general ill health may be brought about by want of proper attention to the mouth, causing a chronic state of putrefaction the products of which are absorbed by the mucous membrane with serious results to the general health. He was able to restore a patient by nothing more than properly cleansing the mouth. It has also been ascertained that the condition of the oral secretions and caries of the teeth act injuriously in various ways. The examination of 987 children demonstrated that 99 per cent. of all those suffering from caries of the teeth were affected with putrefaction and swelling of lower glands, of which no physician would be able to make a diagnosis.—W. D. MILLER, *International Dental Journal*.

**How to Harden Plaster Casts.**—It is claimed that the following process, if strictly carried out, will harden plaster of Paris forms, making them susceptible to a very high polish: Take one part alum free from iron, dissolve the alum in five and one-half parts hot water, immerse the plaster form in this solution, and allow it to remain therein from one-half hour to several weeks, depending upon the size and bulk of the form under treatment. After it has absorbed a sufficient quantity of the solution remove the form and from time to time drench it with the same solution until a coating of crystallized alum is formed over its entire surface; when thoroughly dry polish with fine sandpaper and finish by rubbing with a damp cloth. The product will be a hard, dense mass of fine texture extremely white, showing a high polish and resembling Carrara marble.—*Exchange*.

**Such is Fame!**—"Die häufigste und dabei nicht am wenigsten gefürchtete aller Operationen, das Zahnziehen, scheint einem neuen Fortschritt entgegenzugehen. Seitdem der Engländer Horace Wells im Jahre 1844 zum ersten Mal zur Linderung des Schmerzes beim Zahnziehen Aether anwandte, sind unzählige Mittel zu dem gleichen Zweck versucht worden."

The above paragraph is from an article entitled "Schmerz- und blutloses Zahnziehen" in the *Archiv für Zahnheilkunde*, and translated into English is as follows: "The most frequent and not the least feared of all operations,—the extraction of teeth,—seems to be on the verge of an improvement. Since the Englishman, Horace Wells, used ether for the first time in 1844 for the relief of pain incident to the extraction of teeth, a considerable number of agents have been tried for this purpose."

**Nasal Method of Nitrous Oxid Anesthesia.**—The *Lancet* of June 28th contains an article by Mr. Harvey Hilliard, giving further notes on the use of his naso-pharyngeal tube for prolonging the anesthesia produced by an ordinary administration of nitrous oxid gas. Since publishing his original paper in 1898, he has made certain alterations in the apparatus, and finds it now gives him a perfect anesthesia in all types of patients, the longest time that he has kept a patient anesthetized in this way being seven and a half minutes. His method is to partially anesthetize the patient by means of a Hewitt's gas apparatus, after which he removes the face-piece and rapidly passes the nasal catheter; then reapplies the face-piece till further anesthesia occurs. Then the Hewitt's apparatus is put aside and the administration is continued through the nasal tube. He states that the catheter can be easily cleansed, and that it is not so much in the way of the operator as the ordinary nose-piece.—*Med. Times and Hospital Gazette*.

**Popular Dental Education.**—It has been stated that the real groundwork of national health is the condition of the masses; so the intelligent comprehension of the varied affections of the mouth and teeth, and a better appreciation of the causes of deterioration and of the means by which they may be counteracted, are essential as the groundwork of the much-needed improvement in the dentures of mankind. Dental colleges may multiply, and each recurring year send out hosts of graduates; legislatures may pass laws regulating the practice of dentistry; thousands of operators may be kept busy in the work of repair, and still the deterioration will go on, and still a vast amount of disease will make its ravages. The remedy is the education of the people. They must be made to realize the priceless value of their dental organs. Fathers, mothers, and children must be made to understand that neglect which involves the loss of teeth is inexcusable and suicidal. How to disseminate such knowledge is the problem which may well engage the attention of dental organizations.

**Ethyl Chlorid in Dental Operations.**—Hatch, a dental surgeon of Bristol, prefers ethyl chlorid to gas, "in the great majority of cases, when properly administered." He has invented a new inhaler from which this and all other anesthetics can be administered. He finds ethyl chlorid most satisfactory for children, who go to sleep in from six to eight inhalations, are under the influence long enough for the extraction of five or six teeth, and then quickly and perfectly recover. In delicate women, and in a case of heart disease judged to be unsuitable for chloroform, gas, or ether, ethyl chlorid has given excellent results. He has had samples of Kelene, Narcotile, and Henning's ethyl chlorid analyzed, and has found them identical in specific gravity and boiling-point. Recovery after narcosis is as quick as from gas. If necessary, the inhalation may be repeated three



or four times. The recumbent position is best for children. Hatch has had an experience of about eight hundred cases of ethyl chlorid narcosis, but does not say whether he was the administrator in all or any of them.—*Treatment.*

**Nitrous Oxid Anesthesia.**—Nitrous oxid narcosis, as, indeed, all general anesthesia, should be preceded by an examination of the heart and mouth. Unlike chloroform or ether, it may be "pushed" from the start, the face-piece of the apparatus being crowded down snugly and all air excluded, after a preliminary whiff or two of mixed gas and air. Relaxation is not a purpose of this narcotic, and marked rigidity often accompanies complete unconsciousness. Cyanosis is the rule, but it should not be allowed to pass beyond the point of duskiess, or be long maintained at deep blueness of the features. When the narcosis is prolonged or the cyanosis is deep, the administration should be remitted, and the patient allowed to breathe air for a brief period. That asphyxia is not essential to the production of anesthesia by "laughing gas" is shown by the fact that, by means of gas and oxygen admitted to the face-piece of an apparatus in regulated proportions, from separate cylinders, a sufficiently deep narcosis may be maintained, for an hour if necessary, without the appearance of any cyanosis.—*Internat. Journ. of Surgery.*

**Dangers in the Use of Lysol.**—The following is an account of a case (quoted by Linck in the *British Medical Journal*) in which fifty cubic centimeters of undiluted lysol were accidentally included in an enema. Unconsciousness followed, with stertorous breathing, feeble pulse, loss of reflexes, and rigidity of the extremities, and death occurred the same day. Introducing lysol into the large intestines of rabbits, the writer found that a dose of 0.224 cubic centimeter per kilogram of body weight produced slight clonic convulsions, which were intensified by larger doses; 0.566 cubic centimeter produced unconsciousness; and one cubic centimeter, death. The symptoms depended on the total dose, and did not vary with differences in its concentration. Erosions, more or less extensive, were found in the intestinal mucosa. When the lysol was introduced into the stomach the same effects were produced, but a larger dose was required; 1.16 cubic centimeters per kilogram failed to produce any toxic symptoms, and 1.8 cubic centimeters was the minimum necessary for a fatal result. Comparing the post-mortem appearances found in the patient who died after administration of the enema with those produced in the rabbits experimented upon, it was found that there was a correspondence in the intestinal lesions.

**Menthol Preliminary to Anesthesia.**—Mentholization of the mucosa of the air-passages before, during, and after etherization has given Dr. W. A. Briggs (*American Medicine*, April 26, 1902) such satisfaction as to impel him to submit the method to the profession at large. The method is as follows: Sprinkle a dram of oil of peppermint or of saturated alcoholic solution of menthol in the cone; let the patient inhale of this freely for three minutes, then saturate the cone with ether and bring it down slowly over the face; after a few full inhalations crowd the cone down well and push the etherization as rapidly as is consistent with safety; continue the use of mentholized cone through the whole period of anesthesia, replenishing the ether as usual. After the operation let the patient inhale oil of peppermint or menthol from a handkerchief, freely and often until the tendency to nausea subsides. The advantages over the usual method are as follows:

1. Entire freedom from cough and sense of impending suffocation, and comparative freedom from nausea, vomiting, and retching.
2. Ease and rapidity with which anesthesia may be induced, and the ease and smoothness with which it may be maintained.
3. Entire absence or marked abbreviation of the period of excitement.
4. Economy of ether and of time occupied.
5. Profounder initial anesthesia, under which minor operations may be done with more certainty.
6. Probably less post-operative nausea and vomiting.—*Merck's Archives*.

**The Use of Glycerin as a Solvent for Antiseptics.**—V. Wunschheim (*Arch. f. Hyg.*, Bd. xxxix, H. 2) propounds the question whether glycerin added to antiseptic solutions, or used as a solvent, affects their bactericidal properties. This is an important question, inasmuch as glycerin is frequently employed as a vehicle, or is added to such solutions. The results obtained by his experiments may be analyzed as follows: (1) Undiluted commercial glycerin exhibits a bactericidal effect on cholera vibrios, staphylococcus pyogenes aureus, and bacillus coli. (2) In glycerin and water mixtures, bacillus coli and staphylococcus aureus remain alive longest in those where the percentage of glycerin is lowest; the effect of high percentages of glycerin in mixture with water appears to differ according to the variety of bacterium. (3) Glycerin solutions of sulfuric acid, oxalic acid, carbolic acid, the three isomeric cresols, creolin, saprol, lysol, thymol, formol, and tannin, correspond in bactericidal powers with watery solutions of these substances of equal concentrations. (4) Hydrochloric acid, acetic acid, and acetone behave differently; acetic acid in glycerin solution is not so active as in watery solution, hydrochloric acid and acetone in glycerin more so. (5) The disinfectant activity of 1:40 carbolic in glycerin-water mixture increases with increased concentration of the glycerin, and in mixture of equal parts corresponds with the activity of the simple watery solution of 1:40. For practical purposes a solution of carbolic acid in pure glycerin should not be of a lower percentage than 10, but in a mixture of equal parts of glycerin and water lower percentages than this possess active bactericidal power. (6) Carbolic acid, orthocresol, lysol, and creolin dissolved in glycerin-soap solutions are less active than corresponding percentages in simple soap solutions.—*British Journal of Dental Science*.

**Dental Laws in British Colonies.**—In British South Africa no license to act as a dentist is granted to any applicant on the degree, diploma, or certificate of a foreign university or medical school, unless it entitled the holder to practice in the country in which it was granted and unless by the laws of that country British subjects legally qualified to practice as dentists in Great Britain and Ireland "are afforded privileges equivalent to those granted by license under this proclamation."

No one can practice in Cape Colony as a dentist without a license signed by the Colonial Secretary on the recommendation of the Colonial Medical Council. All dental qualifications recognized by the General Medical Council of the United Kingdom entitle the holders to registration. If the applicant bases his claim on the circumstance that he practiced before July 22, 1878, the production of the General Medical Council's certificate to that effect will be called for, unless he happens also to be a licensed dental surgeon under the act of 1878. All dental diplomas registrable in Cape Colony must cover a minimum curriculum of three years, and all applicants must produce with their diplomas a sworn declaration of identity, of the authenticity of the said diplomas, and of the fact that they are entitled to practice as qualified dentists in the countries where

the diplomas were granted, and that they have never been debarred from practice in any country by reason of a misdemeanor or professional misconduct. The license fee is £2 10s.

In connection with dental practice in Natal, application for registration to practice as a dentist is made in writing to the Colonial Secretary, who remits it to the Natal Medical Council. All dental qualifications, certificates, diplomas, degrees, or titles recognized by the General Medical Council entitle the holders to claim registration as dentists, but there must be the same sworn information as in the case of Cape Colony.

Every person duly admitted and lawfully entitled to practice in Cape Colony, or who is a licentiate in dental surgery or dentistry in the United Kingdom or any British colony or possession, is admitted to practice as a dentist in Southern Rhodesia.—*Dental Record*.

---

## DENTAL SOCIETY ANNOUNCEMENTS.

---

### AMERICAN SOCIETY OF ORTHODONTISTS.

THE second annual meeting of the American Society of Orthodontists will be held in Philadelphia, October 8, 9, and 10, 1902. Headquarters, Continental Hotel.

Papers: President's Address. "Normal and Pathological Anatomy of the Alveolar Process and Adjacent Tissue," M. H. Cryer. "A Comparative Study of Mandibular Protrusion," E. C. Kirk. "Art in Relation to Orthodontia," E. H. Angle. "Deformities of the Superior Maxilla from the Standpoint of the Rhinologist," C. H. Kohler. "Causes of Malocclusion," Wm. J. Brady. "Retrusion of Both Jaws with a Single Appliance," R. Ottolengui. "Nasal Occlusion and Septal Deviation in their Relation to Antral Development and Facial Expression," Royal S. Copeland. "Orthodontia from the Standpoint of a Student," Anna Hopkins. "Distal Movement of Molars and Bicusps Limiting Extraction," Lloyd S. Lourie. "Stationary and Removable Appliances, Alone and in Combination," H. A. Pullen. (Subjects to be announced)—W. Booth Pearsall, J. Humphries, J. E. Grevers.

Time will be reserved for the consideration of specimens, pertaining to orthodontia, which anyone may desire to present.

A cordial invitation is extended to the profession.

MILTON T. WATSON, *Sec'y*,  
270 Woodward Avenue, Detroit.

---

### NEW ENGLAND ALUMNI ASSOCIATION OF THE PHILADELPHIA DENTAL COLLEGE.

THE third annual meeting and banquet of the New England Alumni Association of the Philadelphia Dental College will be held at Worcester, Mass., Wednesday, October 15, 1902. The place of meeting will be an-



nounced at the meeting of the Northeastern Dental Association. All ethical graduates are cordially invited to attend.

D. W. JOHNSTON, *Sec'y.*

---

### SOUTHERN CALIFORNIA DENTAL ASSOCIATION.

THE fifth annual meeting of the Southern California Dental Association will be held at Riverside, Cal., October 20 and 21, 1902. An interesting program has been provided.

LEWIS E. FORD, *Sec'y.*

---

### NORTHERN ILLINOIS DENTAL SOCIETY.

THE fifteenth annual meeting of the Northern Illinois Dental Society will be held at Rockford, October 15 and 16, 1902. Members of the profession are cordially invited to be present.

J. J. REED, *Sec'y.*

---

### SEVENTH AND EIGHTH DISTRICT DENTAL SOCIETIES OF THE STATE OF NEW YORK.

THE union meeting of the Seventh and Eighth District Dental Societies of the State of New York will be held in Buffalo, N. Y., on October 28 and 29, 1902. The Business Committee is sparing no effort to make this a most successful meeting.

B. W. WHIPPLE, *Rec. Sec'y,*  
326 West Ferry st., Buffalo, N. Y.

---

### NORTHEASTERN DENTAL ASSOCIATION.

THE eighth annual meeting of the Northeastern Dental Association will convene in Worcester, Mass., October 15, and continue during October 16 and 17, 1902. This meeting promises to be better than its predecessors, in exhibits, clinics, and essays. Invitation is extended to New England dentists, members of their respective state dental societies, to attend and to join the association. Remember the date.

One and one-third fares certificate plan promised on all railroads.

EDGAR O. KINSMAN, *Sec'y.*

---

### NEW JERSEY STATE BOARD OF DENTAL EXAMINERS.

THE New Jersey State Board of Dental Examiners will hold their fall meeting for examinations on Tuesday, Wednesday, and Thursday, October 21, 22, and 23, 1902.

Further information may be had of

J. ALLEN OSMUN, *Sec'y,*  
588 Broad st., Newark, N. J.

## MARYLAND STATE BOARD OF DENTAL EXAMINERS.

THE Maryland State Board of Dental Examiners will meet for the examination of candidates for certificates, on Wednesday and Thursday, November 5 and 6, 1902, at the Baltimore College of Dental Surgery, corner Eutaw and Franklin streets, Baltimore, beginning at 9 A.M.

Application blanks and all information will be furnished by the undersigned.

F. F. DREW, *Sec'y*,  
701 N. Howard st., Baltimore, Md.

---

## ARKANSAS BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of the state of Arkansas will meet in Little Rock, Ark., Monday, December 1, 1902, at 9 A.M., for the examination of applicants for licenses to practice dentistry in this state. Examination will be written. For application blanks and information address

W. H. MARSHALL, *Sec'y*,  
Little Rock, Ark.

J. M. FLENNIKEN, *Pres.*

---

## MASSACHUSETTS BOARD OF REGISTRATION IN DENTISTRY.

A MEETING of the Massachusetts Board of Registration in Dentistry, for the examination of candidates, will be held in Boston, Mass., October 22, 23, and 24, 1902. Candidates who have applied for examination will report to the secretary, Wednesday, October 22d, at 9.30 A.M., at Tufts College Dental Infirmary, corner Huntington and Rogers avenues, and come prepared with rubber dam, gold, and instruments, to demonstrate their skill in operative dentistry. Anyone who wishes may bring his patient; so far as possible patients will be furnished. The board in every instance selects the cavity to be filled. Partially prepared cavities never accepted.

The theoretic examination (written) will include operative dentistry, prosthetic dentistry, crown- and bridge-work, orthodontia, anatomy, histology, surgery, pathology, materia medica, therapeutics, physiology, bacteriology, anesthesia, chemistry, and metallurgy, and will be held at Civil Service rooms, State House, from Thursday, October 23d, at 9.30 A.M., until Friday P.M., October 24th.

All applications, together with the fee of twenty dollars, must be filed with the secretary of the board on or before October 15th, as no application for this meeting will be received after that date. Every candidate for examination must be twenty-one years of age. Application blanks may be obtained from the secretary.

Candidates who have taken an examination, and failed, and desire to come before the board again at this meeting are not required to fill out a second application blank, but must notify the secretary as above in order to be examined. The fee for third and subsequent examinations is five dollars.

G. E. MITCHELL, D.D.S., *Sec'y*,  
25 Merrimack st., Haverhill, Mass.

## ARMY DENTAL CORPS.

SINCE publishing the roster of the Dental Corps in the April issue of the COSMOS, Jno. D. Milliken and Julien R. Bernheim have received appointment, and are in the Philippines, the former being now stationed at Manila, and the latter at San Fernando Pampanga.

The following orders have been recently issued:

Contract Dental Surgeon William H. Chambers, Fort Monroe, will proceed to Fort McPherson, Ga., for temporary duty. (August 26th, D.E.)

Contract Dental Surgeon Alexander P. Bacon, Fort Clark, Tex., will proceed to Camp Eagle Pass, Tex., with attendant, for such time as may be required. (August 16th, D.T.)

Contract Dental Surgeon Alexander P. Bacon will proceed to Fort Yates, N. D., for temporary duty for a period of six weeks, and upon completion of the duty at Fort Yates will proceed to Fort Snelling, Minn., for duty. (August 30th, H.Q.A.)

Contract Dental Surgeon E. P. Tignor, Fort Riley, Kan., was absent on leave from his post during August and September.

*Philippines.*

Contract Dental Surgeon Alden Capenter, Legaspi, Albay, will proceed to Manila, First Reserve Hospital, for treatment. (July 24th, D.N.P.)

Contract Dental Surgeon J. D. Milliken, U. S. A., having reported, will report at the Dental Base Station, Cebu, Cebu, for temporary duty pending the arrival of his dental outfit. (June 9th, D.S.P.)

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

**Gebührenordnung** für Ärzte und Zahnärzte vom 17 Oktober 1901. Bam- | berg, 1902. R. Koch, 15 pp. 12°.

**Anderson** (J. V.) Septic roots and their relation to bridges and crowns. Dental Summary, Toledo, Ohio, 1902, xxii, 454-456.—**Anderson** (Martha) Some notes concerning preparation of teeth for microscopic study. Internat. Dent. J., Phila., 1902, xxiii, 588-590.—**Asay** (J. L.) Dental pathology. Pacific Dent. Gaz., San Fran., 1902, x, 507-512.—**Baker** (A. W. W.) Advanced and retarded denti- | tion; two cases. J. Brit. Dent. Ass., Lond., 1902, xxiii, 427-433.—**Bar** (P.) De quelques formes cliniques de stomatite chez le nouveau-né, et en particulier de la stomatite nécrosante. Rev. de stomatol., Par., 1902, ix, 330-338.—**Barbe**. Papillome de la commissure buccale. Bull. Soc. franç. de dermat. et syph., Par., 1902, xiii, 313.—**Baudouin** (G.) Bec-de-lièvre chez un hérédo-syphilitique



- et syphilides secondaires. *Ibid.*: 308.—**Beltrami** (G.) Sur quelques accidents dus à l'évolution de la dent de sagesse. *Marseille méd.*, 1902, xxxix, 425-433.—**Birch** (J. C.) Una experiencia desagradable con la cocaína. *Correo Odont. Internac.*, Madrid, 1902, vii, 7-10.—**Bliss** (F. W.) Advantages of the clinic. *Pacific Dent. Gaz.*, San Fran., 1902, x, 512-517.—**Bloch** (A.) L'art dentaire et la médecine des campagnes. *Ann. de la Policlin. de Par.*, 1902, xii, 145-155.—**Bogue** (E. A.) Observations on some recent cases of orthodontia. *J. Am. M. Ass.*, Chicago, 1902, xxxix, 306-311.—**Bradford** (J. R.) The relation of biology to medicine. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 683-702.—**Bradley** (O. C.) On two cases of dental anomaly. *J. Anat. and Physiol.*, Lond., 1901-2, xxxvi, 356-367.—**Braquehay** (J.) A propos d'une gastrostomie; indications de cette opération dans les lésions du pharynx et de la bouche. *Bull. de l'Hôp. civ. franç. de Tunis*, 1902, v, 137-143.—**Brewer** (G. E.) Epithelioma of the palate and tonsil; von Langenbeck's operation. *Ann. Surg.*, Phila., 1902, xxxvi, 259-261.—**Brodski** (L. E.) [Treatment of inflammation of the antrum of Highmore.] *Zubovrach vestnik*, St. Petersburg, 1900, xviii, 376-380.—**Broughton-Head** (L. C.) Two cases of bullet wound in the mouth. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 435-438.—**Brown** (G. V. I.) General nervous manifestations in relation to the jaws and teeth. *Internat. Dent. J.*, Phila., 1902, xxiii, 571-581.—**Bruck** (W. W.) Ein Fall von vorstehendem Unterkiefer. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 256-262.—**Calvo-Flores** (L. A.) La antisepsia de la boca como medio de evitar las infecciones locales y generales en los riñones; agentes que pueden emplearse y maneras de llevarla a cabo. *Gac. méd. de Granada*, 1902, xx, 272-278.—**Caplan** (L.) A case of hysteric pain in the mastoid process. [Transl.] *St. Louis Cour. Med.*, 1902, xxvii, 109-111.—**Carpenter** (E. R.) Cocaine and its many uses in dentistry. *Dental Rev.*, Chicago, 1902, xvi, 613-616.—**Carter** (T. S.) Casualty during extraction. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 434.—**Catton**. Iodo-soufre (antiseptique) ou soufre iodé. *Odontologie*, Par., 1902, 2. s., xv, 15-17.—**Cheval**. Lipome pharyngien volumineux; extraction par les voies naturelles; guérison. *Soc. roy. d. sc. méd. et nat. de Brux. Bull.*, 1902, ix, 77-79.—**Chittenden** (C. C.) The legal status of the term reputable as applied to dental colleges. *Internat. Dent. J.*, Phila., 1902, xxiii, 581.—**Cipriani** (F.) La bocca dell'uomo nella profilassi della tisi. *Corriere san.*, Milano, 1902, xiii, 468-471.—**Citelli** (S.) Un caso di sifiloma primitivo del labbro inferiore e della tonsilla destra. *Boll. d. mal. d. orecchio, d. gola e d. naso*, Firenze, 1902, xx, 177-179.—**Otite media acuta e mastoidite consecutiva a una asportazione di tonsilla faringea. *Ibid.*: 179-183.—**Coakley** (C. G.) A case of tuberculosis of the antrum of Highmore. *N. Y. Univ. Bull. M. Sc.*, 1902, ii, 121-125.—**Colyer** (J. F.) Oral sepsis and its relations to general disease. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 409-427.—**Coomes** (M. T.) Tumor of the tongue. *Am. Pract. and News*, Louisville, 1902, xxxiv, 52.—**de Crésantignes** (L.) Inhalateur à réservoir d'air pour l'anesthésie par le bromure d'éthyle, le chlorure d'éthyle, etc. *Rev. de thérap. méd.-chir.*, Par., 1902, lxix, 433-435.—**Crile** (G. W.) Some observations on operations for malignant disease of the mouth and neck. *St. Paul M. J.*, 1902, iv, 536-540.—**Cross** (H. A.) Treatment for the cure of disease of the antrum and of alveolar abscess which is not accessible through the root-canals. *Dental Rev.*, Chicago, 1902, xvi, 621-627. [Discussion], 648-668.—**Cruet**. Appareil fixe de redressement et de contention des dents par le cordonnet; modes d'emploi. *Rev. de stomatol.*, Par., 1902, ix, 321-330.—**Davis** (B.) Co-operation of the patient in pyorrhea alveolaris. *Dental Rec.*, Lond., 1902, xxii, 342.—**Death** under chloroform. *Austral. M. Gaz.*, Sydney, 1902, xxi, 340.—**Delair** (L.) Prothèse bucco-faciale. *Odontologie*, Par., 1902, 2. s., xv, 11-13, 2 pl.—**Dempel** (M. V.) [Diagnosis of inflammation of the antrum of Highmore by Stein's needle.] *Med. Obozr.*, Mosk., 1902, lvii, 618-624.—**Didsbury**. Nouveau procédé d'analgésie des dents produite par l'électricité. [Rap. de Périer.] *Bull. Acad. de méd.*, Par., 1902, 3. s., xlviii, 181-183.—**Donald** (J. A.) Erosion. *Guy's Hosp. Gaz.*, Lond., 1902, xvi, 314-318.—**Doukle** (A. De F.) Anæsthesia. *Plexus*, Chicago, 1902-3, viii, 123-128.—**Downie** (W.) Further report of a case of sarcoma of the tonsil, enucleated two and a half years ago. *Glasgow M. J.*, 1902, lviii, 125.—**Dzierjowski** (B.) [Inflammation of the gums and its treatment.] *Przegl. dent.*, Warszawa, 1902, v, 89-106.—[Alveolar pyorrhea.] *Ibid.*: 123-139.—**Escat** (E.) Sur un procédé d'extirpation des amygdales enchâtonnées. *Arch. internat. de laryngol.* [etc.], Par., 1902, xv, 161-165.—**Escher** (O.) Zahnwurzelringe zur Herstellung von Wurzelkappen und Bandkronen für sämtliche Bicuspidaten und Eckzähne sowie für die oberen Schneidezähne. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 208-210.—**Estes** (W. L.) Anal ulcers. *Penn. M. J.*, Pittsburg, 1901-2, v, 521-526.—**Euphrat** (H.) Fettembolie nach Oberschenkel-halsbruch als plötzliche Todesursache während der Chloroformnarkose. *Deutsche med. Wchnschr.*, Leipz., u. Berl., 1902, xxviii, 526.—**Felliciani** (I.) Effetti eccezionali di stomatite su inferma pellagrica. *Bull. d. r. Accad. med. di Roma*, 1901, xxvii, 498-515.—**Figueira** (M.) Some considerations of the operation of resection of the superior maxilla. *Brooklyn M. J.*, 1902, xvi, 362-367.—**Fillebrown** (T.) Physiological results of operation for cleft palate. *Internat. Dent. J.*, Phila., 1902, xxiii, 557-562, 1 pl.—**Fleury**. Déglutition**

- d'un appareil prothétique; évacuation naturelle de cet appareil. *Rev. de stomatol.*, Par., 1902, ix, 338.—**Floderus** (B.) Om betydelsen af hyperplastiska och tuberkulösa processer i farynx tonsillén. [The significance of hyperplastic and tuberculous processes in pharyngeal tonsils.] *Hygiea*, Stockholm, 1902, n. F., ii, 269; 389; 593.—**Forshaw** (C. F.) Case of tumour of the superior maxilla. *Birmingham. M. Rev.*, 1902, lii, 114.—**Foveau de Courmelles**. La lumière chimique en art dentaire. *Odontologie*, Par., 1902, 2. s., xiv, 573-583.—**Frazier** (C. E.) Facial neuralgia as observed by the busy dentist. *Plexus*, Chicago, 1902-3, viii, 142-145.—**Frazier** (J. M.) Membranous stomatitis complicating pneumonia; eight cases reported. *Texas M. J.*, Austin, 1902-3, xviii, 60-62.—**Fröhner**. Heilung einer Zahnfistel beim Pferde durch Ausmeisselung der Zahns. *Monatsch. f. prakt. Thierh.*, Stuttg., 1902, xiii, 524.—**Carcinom der Oberlippe beim Pferde**. *Ibid.*: 527.—**Plattenepithelkrebs der Oberkieferhöhle beim Pferde**. *Ibid.*: 528-530.—**Géraud**. Sarcoma téléangiectasique de la lèvre inférieure. *Bull. et mém. Soc. anat. de Par.*, 1902, lxxvii, 298.—**Girard** (H.) Recherches sur l'anesthésie au chlorure d'éthyle. [Rap. de Périer.] *Bull. Acad. de méd.*, Par., 1902, 3. s., xlviii, 179-181.—**Goadby** (K. W.) Pyorrhœa alveolaris; progress report. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 545-553.—**Godon** (C.) Enseignement préparation théorique et pratique de la dentisterie opératoire. *Odontologie*, Par., 1902, 2. s., xiv, 593-620.—**Gowers** (Sir W. R.) Taste and the fifth nerve. *J. Physiol.*, Lond., 1902, xxviii, 300-303.—**Gray** (H. M. W.) Eucain as a local anæsthetic, with illustrative cases. *Scot. M. and S. J.*, 1902, xi, 118-122, 1 pl.—**Grayston** (W. C.) Non-cohesive gold. *Dental Rec.*, Lond., 1902, xxii, 291-295.—**Griffith** (F.) Dentists needed in hospitals. *Nat. Hosp. Rec.*, Detroit, 1902-3, vi, 46.—**Guy** (W.) The operation of opening the antrum of Highmore through the alveolar margin. *Dental Rec.*, Lond., 1902, xxii, 299-303, 3 pl.—**Hallopeau & Duval** (R.) Sur un chancre destructif de la lèvre inférieure. *Bull. Soc. franç. de dermat. et syph.*, Par., 1902, xiii, 288-292.—**Harrington** (A. J.) Clinical notes on a case of membranous glossitis. *Dominion M. Month.*, Toronto, 1902, xix, 15-17.—**Hatch** (R. M.) A new anæsthetic apparatus, and some suggestions on the use of ethyl chloride. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 442-448.—**Hawley** (C. A.) Three practical suggestions. *Dental Summary*, Toledo, Ohio, 1902, xxii, 433-436.—**Herbst** (E.) Die Theorie der Brückenarbeiten. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 198-208.—**Die überdeckte Cementfüllung**. *Ibid.*: 214-218.—**Hind** (W.) Occlusion of salivary ducts. *Brit. M. J.*, Lond., 1902, ii, 243.—**Hinkins** (J. E.) What chemical influence has saliva on cement? *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 581-589.—**Hirtz** (E.) Les stomatites d'apparence pseudo-membraneuse et leur traitement; la fétidité de l'haleine. *Odontologie*, Par., 1902, 2. s., xiv, 585-591.—**Höncz** (K.) Die Beziehungen der Stomatologie zu den übrigen Fachwissenschaften der Medicin. *Wien. Zahnärztl. Monatschr.*, 1902, iv, 253-265.—**Honnan** (A.) Diseases and injuries of the mouth, and dental experience as an army surgeon. *Austral. J. Dent.*, Melbourne, 1902, v, 244-253.—**Hoop** (H. N.) Pathology of empyema of the antrum of Highmore. *Med. News*, N. Y., 1902, lxxxi, 296-300.—**Huber** (A.) Ulcera tuberculosa pharyngis. *Orvosi hetil.*, Budapest, 1902, xlv, 449.—**Ireland** (R. L.) Administration of chloroform and ether. *Louisville Month. J. M. and S.*, 1902-3, ix, 99-103.—**Jackson** (H. N.) The value of the Wenker rubber jaw as an aid in teaching therapeutics. *Internat. Dent. J.*, Phila., 1902, xxiii, 562-564.—**Jacques** (P.) & **Berthemes** (G.) Traitement opératoire des kystes par a dentaires du maxillaire supérieur. *Bull. de laryngol., otol. et rhinol.*, Par., 1902, v, 102-108.—**Jacquet**. Pelade d'origine dentaire; traitement stomatologique; guérison très rapide. *Bull. Soc. franç. de dermat. et syph.*, Par., 1902, xiii, 299-303.—**Jaquet** (L.) Syndrome néo-dentaire avec pelade. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1902, 3. s., xix, 771-775.—**Jayle** (F.) Les médecins-dentistes. *Presse méd.*, Par., 1902, ii, annexes, 757.—**Jean** (F.) Dentisterie opératoire des matrices pour les obturations plastiques. *Odontologie*, Par., 1902, 2. s., xv, 113-117.—**Jessen** (E.) Zahnhygienische Forderungen für Schule und Heer. *Zahnärztl. Rundschau*, Berl., 1902, xi, Nos. 522; 523; 524.—**Kajiser** (F.) Ed enkel metod att ersätta benet vid partiella underkäksresektioner. [A simple method to replace the bone by a partial lower jaw resection.] *Hygiea*, Stockholm, 1902, n. F., ii, 415-417.—**Keefe** (J. E.) Report on new dental appliances. *Dental Rev.*, Chicago, 1902, xvi, 616-621.—**Keith** (A.) The relationship of the eruption of the permanent teeth to the expansion of the maxillary sinus (antrum of Highmore). *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 529-544.—**Kienböck** (R.) Ueber Technik und Ergebnisse der Röntgenuntersuchung in der Zahnheilkunde. *Wien. Zahnärztl. Monatschr.*, 1902, iv, 241-253, 1 pl.—**King** (H. M.) Suppurative disease of the maxillary sinus. *Dental Reg.*, Cincin., 1902, lvi, 403-421.—**Kirkpatrick** (T. P. C.) The prolongation of nitrous oxide anæsthesia for dental operations by Paterson's method. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 673-682.—**Kleinmann**. Ueber die Anfertigung eines künstlichen Ohres aus Celluloid. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 219-222.—**Die Merk'sche Verschluss-Saugkammer für Kautschukplatten**. *Ibid.*: 263-265.—**Knight** (W.) The modern dentist from a medical standpoint. *J. Am. M. Ass.*, Chicago, 1902, xxxix, 369-371.—**Koecker** (Leonard.) [1785-1850.] Thorpe (B. L.) (Biography.) *Dental Rev.*, Chicago, 1902,



- xvi, 690-695, port. on p. 691.—**Korsh** (P. P.) [Etiology of noma.] *Bolnitsch. gaz.* Botkina, St. Petersburg, 1902, xiii, 1058-1065.
- Laffont** (E.) Calculs salivaires de la glande sous-maxillaire et du canal de Warthon. *Echo méd. d. Cévennes*, Nîmes, 1902, iii, 130-134.—**Langgaard**. Zur Prüfung des Chloroforms. *J. f. Zahnh.*, Berl., 1902, xvii, 91-93.—**Lavrand** (H.) La respiration bucco-nasale est possible. *Rev. hebdomadaire de laryngol.* [etc.], Par., 1902, ii, 70-76.—**Le Beuf** (L. G.) The tongue as a diagnostic factor in disease. *N. Orl. M. and S. J.*, 1902-3, lv, 9-18.—**Leduc** (S.) Production du sommeil et de l'anesthésie générale et locale par les courants électriques. *Compt. rend. Acad. d. sc.*, Par., 1902, cxxxv, 199.—**Lemerle** (L.) Du service militaire des chirurgiens-dentistes et des étudiants en chirurgie dentaire. [Rap.] *Odontologie*, Par., 1902, 2. s., xiv, 620-627.—**Lermoyez** (M.) Résultats éloignés des opérations faites sur les sinus frontaux et maxillaires. *Rev. méd. de laryngol.* [etc.], Par., 1902, ii, 145-159.—**Lindt** (W.) Einige Fälle von Kiefercysten. *Cor.-Bl. f. Schweiz. Aerzte*, Basel, 1902, xxxii, 393; 435.—**Lodge** (E. B.) Tin foil, its manipulation and its value as a tooth-saving material. *Dental Summary*, Toledo, Ohio, 1902, xxii, 451-454.—**Lvoiff** (G. F.) [Result of the inspection of the teeth of the pupils of 2d. Yekaterinoslav Scientific School.] *Zubovrach. vestnik*, St. Petersburg, 1902, xviii, 261-264.—**McBride** (P.) Some functional neuroses of the throat. *Edinb. M. J.*, 1902, n. s., xii, 109-114.—**McCaw** (J. F.) Primary epithelioma of the uvula and soft palate and treatment with the Röntgen rays; report of a case. *N. York M. J.*, 1902, lxxvi, 225-227.—**McCullough** (P. B.) The burnished-cap-crown. *Internat. Dent. J.*, Phila., 1902, xxiii, 545-553, 4 pl.—**McFarlane** (J. S.) The dentist. *Brit. J. Dent. Sc.*, Lond., 1902, xiv, 635-641.—**McKinney** (R.) Pathological tonsils, with some consideration of treatment. *Tr. M. Soc. Tennessee*, Nashville, 1902, lxi, 140-152.—**Malherbe** (A.) Notes d'après 600 observations sur un nouveau procédé d'anesthésie générale par le chlorure d'éthyle. *Bull. de laryngol., otol. et rhinol.*, Par., 1902, v, 119-124.—**Malloizet** (L.) Sur la sécrétion salivaire de la glande sous-maxillaire du chien. *J. de physiol. et de path. gén.*, Par., 1902, iv, 641-655.—**Marchand** (L.) Développement des papilles gustatives chez le fœtus humain. *Compt.-rend. Soc. de biol.*, Par., 1902, 11. s., iv, 910-912.—**Martinez Suárez** (F.) Valor de las mezclas anestésicas en los cardíacos. *Rev. Ibero-Am. de cien. méd.*, Madrid, 1902, vii, 241-244.—**Mellersh** (W. F.) A method of obtaining accurate matrices for porcelain inlays. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 440-442.—**Mondino** (L.) Sarcoma del maxilar superior izquierdo; resección. *Rev. méd. d. Uruguay*, Montevideo, 1902, v, 182-184.—**Monnier** (L.) Note sur un cas de perforation syphilitique du palais guérie par l'uranoplastie. *Parole. Rev. internat. de rhinol.* [etc.], Par., 1902, n. s., iv, 362-364.—**Montell** (W. A.) An improved maxillary splint; exhibition of patient. *Gaillard's M. J.*, N. Y., 1902, lxxvii, 33-35.—**Moreno Melgar** (E.) Contribución al estudio de las amigdalitis crónicas. *Rev. Ibero-Am. de cien. méd.*, Madrid, 1902, vii, 290-310, 1 pl.—**Morestin** (H.) De la résection du nerf dentaire inférieur par la voie sous-angulo-maxillaire. *Bull. et mém. Soc. anat. de Par.*, 1902, lxxvii, 220-225.—**Morley** (W. H.) Suppurative parotitis following removal of pus tubes. *Physician and Surg.*, Detroit and Ann Arbor, 1902, xxiv, 206-208. [Discussion], 218-220.—**Mosher** (H. P.) A self-retaining tongue depressor. *Boston M. and S. J.*, 1902, cxlvii, 151, 1 pl.—**Neilson** (T. R.) Sarcoma of the left superior maxillary bone in a child of eleven. *Ann. Surg.*, Phila., 1902, xxxvi, 285.—**Nicola** (B.) Su la sutura zygomatico-maxillaris. *Gior. d. r. Accad. di med. di Torino*, 1902, 4. s., viii, 321-344.—**Nikolayeff** (V. V.) [Treatment of sensitive dentin.] *Kazan m. j.*, 1902, ii, 251-264.—**Norris** (C. C.) Preliminary anaesthesia by nitrous oxide gas; report of 150 cases by this method compared with 150 cases of plain etherization. *Univ. Penn. M. Bull.*, Phila., 1902-3, xv, 178-182.—**Oefele**. Ein Fall, in welchem Praemolaren Molaren ersetzen. *Deutsche zahnärztl. Wchnschr.*, Wiesb., 1902, v, 202.—**Owens** (J. E.) A method of inserting artificial crowns. *Dental Summary*, Toledo, Ohio, 1902, xxii, 441-450.—**Peck** (A. H.) Physical diagnosis as related to dental college curricula. *Internat. Dent. J.*, Phila., 1902, xxiii, 565-571.—Care of children's teeth. *Dental Rev.*, Chicago, 1902, xvi, 627-634. [Discussion], 668-682.—**Polyák**. Adenocarcinom der rechten Nase mittelst der temporären Resektion des Oberkiefers (nach Langenbeck) entfernt. *Pest. med.-chir. Presse*, Budapest, 1902, xxxviii, 629.—**Poncet** (A.) Actinomycose d'apparence néoplasique du maxillaire inférieur. *Rev. de chir.*, Par., 1902, xxii, pt. 2, 1-15.—**Port** (G.) Unterzahl und Retention von Zähnen, sowie das Stehenbleiben von Milchzähnen unter der Kontrolle von Röntgenphotographie. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 193-198, 1 pl.—**Prince** (L. H.) Technic of administration of chloroform and ether. *Milwaukee M. J.*, 1902, x, 136-143.—**Prosad** (J.) Care of severe chronic stomatitis. *Indian M. Rec.*, Calcutta, 1902, xxiii, 11.—**Reboul** (J.) Un cas de calculs salivaires du canal de Wharton chez un garçon de quinze ans. *Echo méd. d. Cévennes*, Nîmes, 1902, iii, 145-150.—**Reeves** (W. T.) The possibilities of porcelain as a filling material. *Dental Reg.*, Cincin., 1902, lvi, 379-403.—**Reichert** (M.) Ueber eine neue Untersuchungsmethode der Oberkieferhöhle mittelst des Antroskops. *Illust. Monatschr. d. ärztl. Polytech.*, Berl., 1902, xxiv, 106.—**Riva** (M.) Un caso de reimplantación dentaria. *Correo odont. internac.*, Madrid, 1902, vii, 35-37.—**Rolland** (G.)



L'art dentaire en Angleterre, en Italie et en Suisse. *Gaz. hebdomadaire de médecine et de chirurgie*, Bordeaux, 1902, xxiii, 377-379.—**Ross** (T. G.) Polypoid excrescence of tonsils. *Montreal M. J.*, 1902, xxxi, 513.—**Sauvez**. De l'emploi de l'extrait des capsules surrénales en particulier dans la chirurgie dentaire. *Odontologie*, Par., 1902, 2. s., xv, 81-102.—**Schön** (A.) Zur Geschichte der künstlichen Zähne; ein Nachtrag zu dem Artikel Donops in Nr. 521. *Zahn-techn. Rundschau*, Berl., 1902, No. 523.—**Schreiber** (M.) Ueber den Verfall der Zähne. *Bl. f. Volksgesundheit*, Münch. and Leipz., 1902, ii, 213.—**Schröder** (H.) Einleitende Untersuchungen zum Kapitel: Die Prognathie des oberen Gesichtes. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 97; 222.—**Schwarz** (R.) Due casi di chirurgia parotidea. *Riv. veneta di sc. med.*, Venezia, 1902, xxxvii, 70-79.—**Schweinburg** (B.) Ein Fall von Zahninversion mit Durchbruch des Zahnes in die Nase. *Wien. med. Presse*, 1902, xliii, 1354.—**Shpigel** (Anna.) [Gangrene of a part of the alveolar process of the lower jaw under the influence of measles.] *Zubovrach. vestnik*, St. Petersburg, 1902, xviii, 265-267.—**Smith** (E. H.) A contribution to operative orthodontia. *Internat. Dent. J.*, Phila., 1902, xxiii, 553-557, 4 pl.—**Smith** (G. E.) On the presence of an additional incisor tooth in a prehistoric Egyptian. *J. Anat. and Physiol.*, Lond., 1901-2, xxxvi, 386.—**Soubeyran** (P.) Glossite aiguë parenchymateuse. *Montpel. méd.*, 1902, 2. s., xv, 687-691.—**Epithélioma lingual à siege exceptionnel**. *Ibid.*: 691-693.—**Spillmann**. Urticaire bulleuse de la cavité buccale. *Bull. Soc. franç. de dermat. et syph.*, Par., 1902, xiii, 315.—**Stössel** (M.) Die Verderbnis der Zähne und ihre Verhütung. *Zahn-techn. Rundschau*, Berl., 1902, No. 522.—**Sturmann**. Zur Behandlung der Oberkieferhöhlenerkrankungen. *Berl. klin. Wchnschr.*, 1902, xxxix, 684-689.—**Swain** (H. L.) Acute inflammation of the third or pharynx tonsil. *Yale M. J.*, N. Haven, 1902-3, ix, 35-44.—**Talbot** (E. S.) Evolution of the pulp. *J. Am. M. Ass.*, Chicago, 1902, xxxix, 236-242.—**Tandler**.

Einiges über das Antrum Highmori in Bezug auf die Zahnheilkunde. *Wien. zahnärztl. Monatschr.*, 1902, iv, 281-290.—**Thompson** (J. A.) Acute suppuration in the maxillary antrum treated through the normal opening. *Texas Cour.-Rec. Med.*, Fort Worth, 1902, xix, 403.—**Thomson** (St. C.) A case of chancreiform ulcer of the tonsil (Vincent's angina). *Polyclin.*, Lond., 1902, vi, 404.—**Tims** (H. W. M.) On the succession and homologies of the molar and premolar teeth in the mammalia. *J. Anat. and Physiol.*, Lond., 1901-2, xxxvi, 321-343.—**Tothill** (W.) Pyorrhœa alveolaris. *Dental Rec.*, Lond., 1902, xxii, 295-297.—**Wallace** (J. S.) The irregularities of the teeth. *Ibid.*: 289; 337.—**Wallenberg**. Eine neue Chloroformmaske. *Cor.-Bl. f. Zahnärzte*, Berl., 1902, xxxi, 210-214.—**Webb** (T. L.) The removal of portions of suspicious growths or ulcers in the mouth for microscopical examination. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 438-440.—**Wedelstaedt** (E. K.) A few words about packing amalgam in cavities in the proximal surface. *Dental Summary*, Toledo, Ohio, 1902, xxii, 436-440.—**Widdowson** (T. W.) Extractions. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 625-635.—**Wilson** (E.) La sepsia oral como factor etiológico. *Arch. de la Soc. estud. clin. de la Habana*, 1901-2, xi, 176-191.—**Wishart** (D. J. G.) Hydrobromic ether; notes upon its use as an anesthetic in adenoids and tonsil operations. *Dominion M. Month.*, Toronto, 1902, xix, 10-15.—**Wood** (W. J. N.) Notes of a few cases of bullet wounds in the Boer war. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 577-580.—**Zanardi** (U.) Sopra un caso di ranula congenita di grandi dimensioni. *Gazz. d. osp.*, Milano, 1902, xxiii, 827.—**Zelenski** (G. A.) [Inflammation of the antrum of Highmore in influenza; on the complications of influenza.] *Prakt. Vrach.*, St. Petersburg, 1902, i, 562.—**Znamenski** (N. N.) [Alveolar pyorrhœa, its patho-anatomy, causes and radical treatment.] *Med. Obozr.*, Mosk., 1902, lvii, 439-454, 3 pl.

## LIST OF UNITED STATES PATENTS

PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING AUGUST, 1902.

- August 5.—No. 706,013, to THOMAS J. BOYCE. Rotary scraper for finishing artificial dentures.  
 " " —No. 706,016, to FRANK A. BREWER, JR., and GEORGE W. HARVEY. Dental flask.  
 " " —No. 706,358, to CHARLES K. TETER. Apparatus for administering anesthetics.  
 " 12.—No. 706,710, to JOSEPH C. ALLEN. Receptacle for tooth-powder or other material.  
 " 26.—No. 707,810, to RAYMOND J. WENKER. Dental form for holding teeth.  
 " " —No. 707,912, to CHESTER M. FREEMAN. Fountain spittoon.

# THE DENTAL COSMOS.

---

VOL. XLIV. PHILADELPHIA, NOVEMBER, 1902.

---

No. II.

## ORIGINAL COMMUNICATIONS.

---

### THE MAKERS OF DENTISTRY.\*

BY CHARLES MC MANUS, D.D.S., HARTFORD, CONN.

(Read before the New York Odontological Society, April 15, 1902.)

IT is not my purpose this evening to enter into the consideration either of the history of the dental art or the development of the dental profession. I simply desire, with your kind indulgence, to present a certain phase of a matter; to throw, as it were, a sort of side-light upon what I will admit is, to the intensely practical man, a rather dull subject.

In one of those odd moments when he was not writing a Shakespearean play, Lord Bacon said—and I fear it is one of the few of his *own* remarks that are ever quoted to-day—that he “held every man a debtor to his profession.” I wonder if the latest of the professions, one of which Bacon never dreamed, is not still young enough to be not only indebted, but grateful, to the men who have worked so hard to make it what it is to-day.

In one of the March journals I was pained to read that “the picture of the rise and development of dentistry portrays after all only a sorry success. The mischief wrought by unscientific men during those long years of development, who can tell!”

While dealing with my subject almost entirely from the personal—I might say the anecdotal—side, I propose to recall to your memory some of the men and their successes that were not “sorry”; some of their work the results of which were not mischievous, and may I hope that the pessimism of the lines I have just

---

\*[This lecture was copiously illustrated by the presentation of stereopticon projections of their portraits as the pioneers of dentistry were referred to. We regret that through lack of space we are unable to reproduce them here.—  
ED. COSMOS.]

quoted may serve as an excuse for the possible optimism of my remarks to-night.

Emerson says, "Every ship that comes to America got its chart from Columbus; every novel is a debtor to Homer; every carpenter that shaves with a draw-plane borrows the genius of a forgotten inventor. How easily we adopt their labors!"

Every dentist at his chair or in his laboratory to-day has had his work made easier and better by the ideas and inventions of those who have gone before.

It is fitting, perhaps, that we should turn our thoughts to France and look upon the face of one who, although not a dentist, may, as Dr. Wm. H. Trueman says, be called "the Foster-father of Dental Surgery." Three hundred and seventy-five years ago *Ambroise Paré* arrived in Paris to begin his wonderful career as a barber-surgeon, an occupation which at that time combined those of barber and surgeon with a little dentistry. He followed the wars for many years, was Master Barber-Surgeon to the army, and during his long life was surgeon to four kings of France. Paré proposed to treat wounds with supporting bandages, control hemorrhages with ligatures, and assist nature with soothing applications in place of the time-honored actual cautery and boiling oil. He wrote a number of works, in French, on surgery, touching also upon the practical part of dentistry; he referred to the transplantation of teeth, favored lancing the gums in cases of difficult dentition, and described a number of dental instruments and several obturators of ingenious construction. He died at an advanced age in 1590.

Nearly a hundred years after the death of Paré was born *Pierre Fauchard*, destined to be called, with great propriety, the "Father of Dental Surgery." To this able man modern dentistry may be said to owe, if not its origin, at least its first systematic organization as a specialty of surgery. He collected in a masterly work entitled "*Le Chirurgien Dentiste*"—of which the first edition, in two vols., was published in 1728—nearly everything of value that had been done in dentistry before his time, everything that his experience taught him, and all the improvements that his inventive genius enabled him to introduce into the practice of his art. Harris says:—"Fauchard deserves to be affectionately remembered as a noble pioneer and sure founder of dental science. That his practice was rude was due to his times; that it was scientific and comparatively superior and successful was due to himself."

The year that Fauchard published his epoch-making work there was born in Scotland, the youngest of a family of ten, *John Hunter*. Although he was not a dentist, one cannot refer to our early history without mentioning with gratitude his great work and influence. There seems to have been nothing in the "heavens above, the earth beneath, or the waters under the earth" that did not enlist the attention of this marvelous physiologist, anatomist, and surgeon.



Coming late, he developed slowly, and like a true investigator, he never cared overmuch for mere "book learning," and published nothing save a few notes added to the writings of other men until he was forty-three years old, when his "Treatise on the Natural History of the Human Teeth" appeared, in May, 1771. This portrait is after the painting by his friend, Sir Joshua Reynolds.

The first advent of dentistry in our midst seems to have been in Boston,\* when in about 1636 the Plymouth Company, an association organized for the purpose of benevolently assimilating that section of country, sent out from London a company of physicians, an apothecary, and three barber-surgeons. Of these three we know the name of but one, William Dinely, who perished in a violent snowstorm in the winter of 1639 while on his way to relieve a man of the toothache.

It is nearly a hundred years before we find any records of dentists in New York,—John Mills in 1735 being, perhaps, the first,—and James Daniels, in 1766, certainly realized that there was a field, as he advertised that along with his wig-making and hair-dressing he would operate on the teeth: "a business so absolutely necessary in this city." This same year came Mr. Robert Wooffen-dale, who was for the time a regularly educated dentist and a pupil of the well-known Thomas Berdmore, dentist to that amiable monarch, George III. A Mr. John Baker arrived in New York in May, 1768, from Boston, where he was succeeded by his pupil, *Paul Revere*, a man of many and varied occupations, but who found time to announce in the *Boston Gazette* for December 19, 1768, that—

"Whereas many persons are so unfortunate as to lose their fore-teeth by accident and other ways, to their great detriment, not only in looks, but speaking, both in public and private: This is to inform such that they may have them replaced by artificial ones that look as well as the natural and answer the end of speaking to all intents.

"By PAUL REVERE, Goldsmith,

"Near the head of Dr. Clarke's wharf."

Among Revere's patrons was Dr. Joseph Warren, who fell at Bunker Hill, and whose remains, when exhumed after the evacuation by the British, were identified by Colonel Revere from work done by him in the mouth.

Whatever place we may be willing to give to the men I have just mentioned, I think we can safely say that dental science came to this country in the person of a young officer of the French contingent, under the Count de Rochambeau. *Joseph Lemaire* was a dentist of Paris who, following the example of many of his countrymen, abandoned his business and tendered his services to the cause of liberty. During the winter of 1781-82, the war being

---

\*"The Advent of Dental Science in the United States," by W. H. Trueman, D.D.S., *DENTAL COSMOS*, vol. xxxviii, pp. 713-723.

then virtually over, the French and American armies were quartered, side by side, near Providence, R. I. Lemaire had now and then, to the great comfort and satisfaction of his companions, performed dental operations for their relief, and now many of the officers and others took advantage of the opportunity to secure his services. In this camp we find in intimate friendship, Joseph Lemaire, James Gardette and Josiah Flagg. The latter was greatly interested in Lemaire's work and proved an apt and zealous student. Gardette, who had arrived with the French fleet as a naval surgeon and had received instruction in dentistry as required in the French service at that time, was glad to add to his dental knowledge already acquired.

"So, you see," says Dr. Trueman, "it needs but little stretch of the imagination to locate the first school for dental instruction in the United States and the first dental meeting for mutual improvement around this Revolutionary camp-fire."

*James Gardette* was educated for the medical profession and we have no reason to think that he contemplated the practice of dentistry when he left France other than as a part of his work as a naval surgeon. He soon acquired a distaste for the sea and resigned his position. He went to Boston from Newport, and in the autumn of 1783 we find him in New York. His professional success in that city seems to have been small, his limited knowledge of English being undoubtedly an impediment. It was not until the autumn of 1784 that he attained the position which determined his permanent residence in Philadelphia, where he continued to practice for forty-five years. Gardette was one of the first to substitute flat gold bands in place of ligatures of silk or fine gold wire for securing artificial teeth to living ones. He invented a gold "mortise" plate and has usually been given the credit of having been the first to apply the principle of suction or atmospheric pressure for the support of entire sets of teeth, dispensing with the use of springs, though this idea is to be found in Fauchard's book. Gardette was one of the early dentists who adopted gold foil, instead of lead or tin, as the best material for filling teeth, and often related that he prepared gold foil for his own use from Dutch ducats. In 1822 he received the "John Scott Legacy for the encouragement of useful inventions in the arts and sciences," for a lever instrument for the extraction of teeth. In 1827 he published an article disapproving of the transplantation of the human teeth, which is believed to have been his only literary effort. In 1829 he returned to his native country, taking up his residence in Bordeaux, where he died from an attack of gout, August, 1831.

As far as we can learn, the first native American dentist was *Josiah Flagg*, a private in Colonel Elliot's regiment, of which his father was Lieutenant-Colonel. Through his father's influence he became known to Joseph Lemaire and profited by the acquaintance. After the revolution he became an itinerant and later settled in Boston. During this period this quaint advertisement states that he—

"Transplants teeth; cures ulcers; and eases them from pain without drawing; fastens those that are loose; mends teeth with foil and gold to be as lasting and useful as the sound teeth *and without pain in the operation*; makes artificial teeth and secures them in an independent, lasting, and serviceable manner; . . . . . sews up harelips and fixes gold roofs and palates, greatly assisting the pronunciation and the swallow. . . . . Cuts defects from teeth and restores them to whiteness and soundness without saws, files, acids, and other abusers as have shamefully crept into the profession. Sells by wholesale and retail dentifrices, tinctures, chew-sticks, masticks, teeth and gum brushes, suitable for every age, complaint, and climate, with directions for their use."

He probably considered the war of 1812—in which he fought, was captured, and taken to London—as a relaxation from active practice, but even there, while on parole, he made the acquaintance of Sir Astley Cooper and is said to have assisted him in operations at Guy's Hospital. After his return to America he lived for some time in Charleston, S. C., where he died of yellow fever in 1816.

There were many Greenwoods, and a number of them were dentists, but the most celebrated of them all was *John Greenwood*, the friend and professional adviser of that great soldier and courteous gentleman, the first President of the United States. Greenwood's father is said to have practiced dentistry in Boston as early as 1770, and his grandfather was the Rev. Isaac Greenwood, professor of mathematics and natural philosophy at Harvard College.

Born in 1760, he was apprenticed at the age of thirteen to an uncle, a cabinetmaker, but, at the outbreak of the revolutionary war, he quietly left, one Sunday morning while the family were at church, and patriotically enlisted for eight months, fighting at Bunker Hill and through the campaign in Canada and at Trenton. He afterward served as a privateersman, was captured at least twice, the first time being released after an imprisonment of five months and the other time escaping. At the close of the war we find him in New York, without means, and receiving but little encouragement from his brother, a dentist in that city. Becoming for a time a nautical and mathematical instrument-maker, a mere chance turned his attention to dentistry, but, developing exceptional skill, he soon acquired a practice. Passing beyond the usual limits of tooth-drawing, tooth-replacing, and tooth-filing, he boldly entered the domain of oral surgery and treated by novel surgical procedure diseases of the maxillary sinus. But what has made John Greenwood famous is his having been the dentist of George Washington. Time will not permit our dwelling upon the friendly professional relations existing, or the many letters that passed between them.

In one of these epistles, the dentist wrote:

"I expect next spring to move my family to Connecticut state. If I do, I will write and let you know, and whether I give up my present business or not, I will, as long as I live, do anything in this way for you if you require it."



And the illustrious patient replied:

"If you should remove to Connecticut I should be glad to be advised of it and to what place, as I shall always prefer your services to that of any other in the line of your present profession."

Thanks to the efforts of Professor Edwin T. Darby, we can now look upon the admirable portrait by Sully, of that distinguished Philadelphia dentist, *Dr. Edward Hudson*. Born in Ireland in 1772, it is said that his parents were members of the religious society of "Friends." Upon their early death, an uncle, who was established as one of the most noted dentists of Dublin, adopted Edward as his son and soon after entered him as a student at Trinity College, where he pursued his studies with such ardor and success as delighted his benefactor, in whose office Hudson began the study of dental surgery. While at college he was a member of several of the debating and other societies established about that time (1795) and soon became prominent. He was intimate with many of the most distinguished men of his day and country—the Emmets, Cobbetts, and Tom Moore, the poet. With the latter he was especially familiar, and the friendship then formed between them ceased only with life. Moore says of Hudson: "Though educated merely for the purposes of his profession, he was full of zeal and ardor for everything connected with the fine arts; drew with much taste himself, and was passionately devoted to music. He had, with great industry, collected and transcribed all our most beautiful airs and used to play them with much feeling on the flute. I attribute, indeed," says Moore, "a good deal of my own early acquaintance with our music, if not the warm interest I have since taken in it, to the many hours I passed at this time of my life with Edward Hudson."

The societies of which he was a member at length became so open and liberal in their treatment of political questions that, with many others, Hudson was seized and imprisoned in Fort George, Scotland, where he remained until 1802. After being released, he abandoned his idea of settling in London, came to America and began the practice of dentistry in Philadelphia about 1803. Hudson's professional progress was at first slow, part of his thoughts and time being engaged with some business enterprises which ended disastrously, leaving a burden of debt from which, on a percentage being paid them, the creditors gave a full release. It is characteristic of Hudson that he, in spite of this full release, eventually paid from his professional income all this debt with interest.

Hudson soon attained great eminence in his profession; his kindness, honesty, and the uprightness of his nature gained him hosts of friends, and his skill as a practitioner drew to him so many and such patients, that he acquired a competence. Elisha Townsend remarks that "by his patients he was idolized as few of his professional brethren can ever expect to be." Hudson's standard of excellence in dentistry was not only high, but, for his time, somewhat novel. Eleazar Parmly says of him: "We are probably more indebted to his success than to that of any other man for the im-

portance which was attached at that period to operations which were intended to *preserve* the natural teeth . . . . for by the complete success attending the practice of that great man, the public were soon convinced that teeth could be saved" instead of being extracted. The personal appearance of Dr. Hudson was highly prepossessing; taller than ordinary, his fine figure was well proportioned, and the grace and nobility of his soul were fitly indicated by the outward grace and dignity of his bearing. He died in January, 1833, aged sixty-one years.

The next faded portrait shows *Dr. John Randall*, a celebrated Boston practitioner. Born in 1773, he graduated at Harvard in the class of 1802 and commenced practice about 1805. During his college course he had found that his own teeth had begun to decay, and upon consulting a dentist, he was told that *his* business was to put in *new* teeth and that he declined to perform any operation for the preservation of the natural teeth. Randall immediately sought such light as could be obtained from the comparatively few authors who had then written on the subject, supplied himself with such instruments as could then be obtained, and commenced his first operation on himself. While a pupil in medicine, he performed many dental operations for his friends and classmates. Dr. Randall considered the practice of medicine his calling, dentistry receiving only a portion of his attention. His success in "engrafting" teeth was very great. He considered ten years the average time for a good root to last and support a crown, though many of them did service from twelve to fifteen years, and some even longer. He was eminently successful in extracting, when necessary, used the key with great skill, and the forceps long before they came into general use. For nearly forty years he was a useful and honorable member of society, dying in 1843 at the age of seventy.

Toward the end of the century before last, a traveling Jewish dentist in Hanover, Germany, noticing that a young boy took an interest in his work, talked with him kindly, allowed him to handle the instruments, and even presented him with a small set, which the lad carefully preserved. It is probably owing to this accidental meeting that *Leonard Koecker*, who was born in Bremen, in 1785, after failing as a financial agent, began, about 1807, the practice of dentistry in Baltimore . . . without any knowledge of the art. But his native ability and energy remedied any defects in that direction. Later, Koecker practiced in Philadelphia until 1822, his reputation increasing steadily—indeed, at that date his yearly professional income was said to be eight thousand dollars. His health, however, compelled a voyage to Europe and he eventually settled in London, where he remained the rest of his life in very extensive and widely-known practice. From being at first in great need of a teacher himself, Koecker came to be finally a teacher of others. His work on dental surgery, published in London in 1826, is of considerable merit and long remained a standard. Some of his methods, particularly in the treatment of the dental pulp, were of

much value. Although "pulp-capping" was practiced by others, it was published to the profession by Koecker, who describes it fully in his book. He died in 1850.

The reference to "pulp-capping" naturally suggests that you might care to see the face of the man who first, about 1834, employed arsenic to intentionally "destroy" the dental pulp. *John R. Spooner* was born in New York state in 1794, but in early life removed to Vermont. Being of a studious disposition, he determined to educate himself for a profession, at first studying medicine, but his health being extremely delicate, he decided to become a dentist. He commenced practice in Western New York, but meeting with little success he soon left for Canada, where he settled in Montreal and soon acquired a high reputation as a skillful practitioner. Dr. Spooner was among the very early makers of porcelain teeth, but will be chiefly remembered for his suggestion of the arsenical application.

This fact was announced by his brother *Shearjashub Spooner* in his book "Guide to Sound Teeth," published in 1836. The author of this work, which Robert Arthur said was the "most systematic and elaborate popular treatise which had been published," was born in Vermont in 1809. He went to Montreal and studied dentistry with his brother; he came to New York in 1833 and graduated in medicine. He was one of the best known and most successful dentists of his day. But it is another side of his life that I wish for a moment to call to your minds. A man of learning and culture, painting, engraving, and the kindred arts particularly engaged his attention. He brought out an American edition of Boydell's "Illustrations to Shakespeare" in folio with one hundred engraved plates, the letterpress by himself. He also published other works of great value and interest—a "Biographical and Critical Dictionary of Painters, Engravers, Sculptors, and Architects"; a work in three volumes entitled "Anecdotes of Painters and Engravers," and an edition of the New Testament superbly illustrated with engravings after designs by the great Italian masters. A few years previous to his death he purchased the plates of the art treasures of the great French museums and proposed to restore and publish them, but the customs duty was so heavy that he could not afford to take possession of them, and finally abandoned the enterprise. Dr. Spooner's character was singularly amiable. He was one of the most generous of men, with a temperament mild and sympathetic, though impulsive in every good cause. He died in 1859.

Let us now look for a moment at the portraits of several men who were interested in the early production of porcelain or mineral teeth. *Nicholas du Bois de Chemant* published his "Dissertation on Artificial Teeth" in 1788, and it went through several editions. His dentures were what we would now call mineral plate or continuous gum without the platinum base.



*Audibran* was another pioneer in this work, but it is more interesting to note that at his house, May 7, 1845, was formed the first French association of dentists, under the name of the "Society of Dental Surgeons of Paris."

Porcelain teeth were probably introduced in this country by Plantou about 1817. Next after him *Charles W. Peale* engaged in their manufacture in a small way. Peale was not a dentist, but almost rivaled Paul Revere as a man of many occupations: saddler, silversmith, watchmaker, and most of all, a portrait-painter, in which he acquired his most enduring reputation.

A distinguished practitioner of Vienna and Berlin was *Johann Jacob Josef Serre*, born in 1759. He wrote a number of works on dental subjects: a "Treatise on Rheumatism and Inflammation from which Swellings and Gumboils Proceed," 1791; "Practical Representations of the Teeth," 1803. He died in 1838.

We now come to two men who will ever be remembered as the founders of the profession in this country.

*Horace H. Hayden* was born in Windsor, Conn., October 13, 1769. He was remarkable from his childhood, learning to read, it is said, almost as soon as he did to talk, and at once contracting that love for books which continued all through his life. At the age of fourteen, as cabin-boy of a fine brig, he made two voyages to the West Indies. Obligated to leave school at the age of sixteen, he became an apprentice to an architect, with whom he served until he was of age. He then sought employment in Guadaloupe, West Indies, and was fairly successful, but the periodical fever compelled him to return home.

He now pursued his vocation in Connecticut and in New York, and also taught school, in which work he was strongly urged to continue, but a circumstance had occurred which gave a new direction to his energies. While in New York he had occasion to call on John Greenwood for his professional aid, and during treatment the thought suddenly struck him that he would like to be a dentist. Obtaining what information he could from Greenwood's few books upon the subject, and from his instructions, he went in 1804 to Baltimore, Md., without friends, almost without money, and but imperfectly acquainted with his newly-chosen art. While continuing to practice dentistry with increasing success, he began the study of general medicine, and the extensive knowledge which he acquired secured such confidence and respect that in later life, without solicitation on his part, the honorary degree of "Doctor of Medicine" was conferred upon him by both the University of Maryland and the Jefferson Medical College of Philadelphia. So respectable was his knowledge of surgery considered that during the attack by the British upon Baltimore in 1814 his services were put in requisition as acting surgeon, and his kindness and skill were fully employed in caring for the wounded.

Dr. Harris says that about the year 1825 Hayden was invited to read a course of lectures on dentistry before the medical class

of the University of Maryland. He contributed a number of able papers to medical journals, embodying the results of some of his physiological researches, and he also devoted much time to the study of geology. He had, in 1810, published a "Geological Sketch of Baltimore," and it was near that city that he discovered the form of chabazite to which Prof. Silliman gave the name of "Haydenite."

In December, 1839, at the solicitation of Chapin A. Harris, he consented to unite with him and others in a petition to the legislature to establish a dental college, the faculty to consist partly of dental and partly of medical practitioners. The legislature having granted a liberal charter, Dr. Hayden, at the advanced age of seventy, entered upon the duties of the chair of dental physiology and pathology in the Baltimore College of Dental Surgery. He entered into the work with a zeal and energy worthy of the cause, and having read everything that could throw light upon those subjects, and with his long experience, his lectures were both interesting and instructive.

As far back as 1817, Dr. Hayden had broached the idea of a national convention of dentists, but as it was said, "the pear was not ripe." From time to time he renewed his attempts, only to fail again. At last, after more than twenty years, on August 18, 1840, there assembled in New York a body composed of the best dentists then in the profession for the purpose of forming an association for mutual improvement and encouragement. This meeting resulted in the formation of the "American Society of Dental Surgeons," probably the first regularly-organized dental association in this country. The initiation, progress, and consummation of this enterprise were due, as far as regards individual effort, more to Horace H. Hayden than to all others. He was unanimously chosen president, to which office he was from year to year re-elected during life. Until the illness which terminated his career, Dr. Hayden continued to exercise the duties of his profession and to lecture to his class, and, to use the language of his biographer, "there is much reason to fear that laborious bodily and mental exertion exhausted his little strength and accelerated this event." He died January 26, 1844, in the seventy-fifth year of his age.

*Chapin A. Harris* was born at Pompey, Onondaga county, N. Y., in 1806. Early in life he studied medicine and commenced practice in Ohio. His attention was called to dentistry by his brother John, and, from 1827 to 1833 he visited most of the large towns and cities of the western and southwestern states. Wherever he went the public estimation of dentistry was elevated and his own reputation established. In 1833 he opened an office in Baltimore, and for the next few years he employed a large portion of his leisure in contributing to the pages of periodical literature—usually on dental subjects. In 1838, feeling that his contributions, although productive of good by introducing the profession to the reading and thinking community, nevertheless failed to gain one of their ends—that of improving and benefiting his brethren—he resolved that his scientific writings should take a more compact and permanent char-

acter, and in 1839 he published the first edition of his "Principles and Practice of Dental Surgery." In addition to this, Dr. Harris had felt for a long time the necessity for some means of preserving the experience of the profession and its current literature. To secure this object, he visited the city of New York and urged upon a few professional friends the propriety of establishing a dental journal. His plan was readily embraced by a few ambitious minds and a meeting was promptly called of some of the leading dentists of the city. The immediate result was that several gentlemen contributed a hundred dollars each, and others sums of a smaller amount, so that the expense of publication for one year, in monthly numbers, was fully provided for.

Dr. Harris and Eleazar Parmly were joint editors, and the latter gentleman, with Dr. Elisha Baker and Solyman Brown, were the publishing committee. In accordance with the agreement, the first volume was issued in the city of New York, under the title of the "American Journal of Dental Science."

Feeling that only a part of his object had been accomplished by the establishing of a dental journal, Dr. Harris set himself the task of creating facilities for educating young men scientifically for the duties of the dental profession. Accordingly, in the winter of 1839-40 he, almost entirely unaided, obtained signatures to a petition to be laid before the legislature of Maryland for the incorporation of a college of dental surgery at Baltimore. The charter was granted, and he took upon himself the duties of one of its most important professorships.

Dr. Harris contributed largely to our literature: in 1840 he published a "Monograph on the Physical Characteristics of the Teeth," and in 1841 a "Dissertation on the Diseases of the Maxillary Sinus." He also revised his "Principles and Practice" through several editions and compiled his "Dictionary of Dental Science and Biography." He also translated from the French the works of Delabarre.

He labored assiduously and his private practice was very large, but his liberality was unbounded, and his house and his heart always open to those who approached him with even the remotest claim upon his benevolence. He died poor, in the city of Baltimore, September 29, 1860. "In reviewing the life of Dr. Harris, we are warranted in saying that he not only labored harder, but spent more time and money for the advancement of his profession, than any other man."

With these two men, Hayden and Harris, began the great dental educational theory of the extension of knowledge for the prevention of ignorance.

It is hardly necessary for me to say more than a word on *Horace Wells*, the discoverer of anesthesia. He was born in Vermont, in 1815, and commenced the study of dentistry in Boston, about 1834. Two years later he removed to Hartford, Conn., and soon acquired a reputation for marked ability and skill as a dentist. He had several students, among them Drs. John M. Riggs and Wm. T. G. Morton.



Dr. Wells was a born mechanic of much inventive genius, well informed on many subjects. He delivered lectures on ornithology and in 1838 published a little book entitled "An Essay on Teeth." As a distinguished physician, still living, has said of him: "He went in and out among us, a quiet, unobtrusive gentleman in his profession." He died January 24, 1848.

His pupil, *John M. Riggs*, was born in 1810 and graduated from Trinity College in 1837. He was the first man to extract a tooth with the aid of nitrous oxid. Dr. Riggs gave a clinic and a description of his treatment of the condition now called by a score of names, but popularly known for many years as "Riggs' disease," before the Connecticut Valley Dental Society at Northampton, Mass., June, 1867.

We now come to a gentleman who, by common consent, stood at the head of his profession in this country for more than thirty years.

*Eleazar Parmly* was born in Vermont in 1797, the third of five sons, four of whom afterward became dentists. He pursued his studies in Montreal and with his elder brother, Levi, went to New Orleans. About 1820 he sailed for Europe to perfect himself and practiced successfully in London. After three years he returned to New York city, where he enjoyed an extensive practice. A distinguishing characteristic of Dr. Parmly was a scrupulous attention to little things, which, joined to integrity and cultivated taste, laid the foundation both of his large fortune and his popularity. He retired from active practice in 1861, sought recreation in foreign travel and died in 1874.

Many dentists have written verses but few have composed serious and lengthy poems on dental subjects, knowing full well that

" 'Tis difficult to chime

The laws of science with the rules of rhyme,"

but *Dr. Solyman Brown*, or to be more exact, *Solyman Brown*, A.M., M.D., D.D., D.D.S., possessed a superior mind, was a finished scholar, a polished gentleman, and a writer of ability in both prose and verse. Born in Connecticut, in 1790, he graduated at Yale College in 1812, and removed to New York to pursue his labors as a classical instructor. Here he embraced the doctrines of Swedenborg and became a regular preacher of the "New Jerusalem" church. About 1832 he was invited to enter the family of *Eleazar Parmly*, the eminent dental surgeon, for the purpose of acquiring a knowledge of dentistry. He took a prominent part in the elevation of that art. The first recorded meeting of dentists was held at his residence in Park Place, when the "American Society of Dental Surgeons" was organized.

He had published as far back as 1818, at New Haven, "An Essay on American Poetry," and in 1833 appeared "Dentologia," a poem on the diseases of the teeth, and in 1838 "Dental Hygeia," a poem

on the general laws of health. Dr. Brown died in Minnesota, in 1876, at the advanced age of eighty-six.

It was said of *Elisha Townsend* that "no man, living or dead, held a higher rank in the estimation of his compeers." Born early in the last century, he was (Dr. Taft says) in early life a watch-maker and jeweler, and passed from that occupation to the study of dentistry. Eminent as a private practitioner, a very expert operator, he was equally distinguished by his public services to the profession. He wrote largely and well on many subjects, and made valuable improvements upon the various instruments, especially the small steel instruments. He carried on extensive experiments in the preparation of amalgams for filling teeth, and about 1855 proposed the alloy which was known by his name and extensively used—although he subsequently gave up the use of amalgam. His labors for elevating and liberalizing dentistry were incessant. He died, aged fifty-four, in 1858.

Another grand old man, who endeared himself to the dentists of western New York, was *Amos Westcott*, of Syracuse. He was one of the very prominent operators of his day. He contributed to, and had a great deal to do with, the "*American Journal of Dental Science*." He was often before the profession as one of the strongest co-workers in the dental societies and his labors had far-reaching results. We are indebted to him for many mechanical inventions, and many distinguished dentists were first instructed by him. The first use of plaster of Paris for impressions of the mouth has usually been assigned to Westcott. It was introduced about 1844 or 1845 and credit for priority can probably be divided between Westcott, Dwinelle, and Dunning.

Dr. Westcott established in 1852 the third dental college in the world, at Syracuse, and was its first professor of the theory and practice of dental surgery. It is quite possible that had this school continued in existence it would have been among the foremost of our colleges, but unfortunately it was destroyed by fire in 1855 and its apparatus, museum, and records perished. Dr. Westcott died in 1873.

Gutta-percha came into use as a material for temporary fillings about 1847. An attempt was made to render it available for more permanent operations by the introduction of Hill's Stopping early in 1848 by *Asa Hill*, of Connecticut. He was an ingenious man, and in 1851 suggested what was then called electric or galvanic anesthesia, which caused quite a "furor," but proved unsatisfactory and was given up. Dr. Francis says that Hill spent much time in endeavors to produce a new base for artificial dentures as a substitute for rubber, and worked out a material, rather crude, but similar to celluloid, which was of later origin. Dr. Hill was for a time editor of the *New York Dental Recorder* and was the first president of the Connecticut State Dental Association. In May, 1866, he sent a petition to the faculty of Yale College to consider

a plan for the establishment of a dental department in connection with their medical school. They are still considering it. Dr. Hill died in 1874.

It is probable that for over thirty years even the smallest dental library was not complete without—or perhaps was complete with—Harris' "Principles and Practice" and a copy of the "Treatise on Mechanical Dentistry," first published in 1860 by *Joseph Richardson*. This popular author was born in Ohio in 1824, received a good education, and studied dentistry under Dr. James Taylor, of Cincinnati, afterward occupying the chair of "Mechanical Dentistry" in several colleges. He died in Indianapolis in 1889.

Nothing can show more forcibly the way in which the development of dentistry in this country has occurred within the lifetime of some of the practitioners still living than the next portrait. In 1859, forty-three years ago and the year before Richardson's book appeared, there was published a "Practical Treatise on Operative Dentistry" by *Jonathan Taft*, professor in the Ohio College of Dental Surgery. It is unnecessary for me to more than mention Dr. Taft's name to bring to your minds his long and active service in the uplifting of dentistry in every way.

But, to return to the past: In the spring of 1855 *Robert Arthur*, of Baltimore, advised the profession "of a new method of using gold foil," which consisted in annealing the foil over a spirit-lamp before use, thereby developing its cohesive property. He did not entirely realize the great prospective value of his discovery, for he said: "I have no idea that gold will be used generally in the manner I now recommend, as it is exceedingly difficult to induce men to change a course which they have successfully used for years. However, I confidently say to every operator in the profession that if fairly tried it will afford advantages in the use of gold foil of which few have dreamed." Immediately upon the publication of the process it was declared by several dentists that it was "nothing new,"—that it had been known for ten or fifteen years. And undoubtedly dentists had been troubled, and had in turn troubled the manufacturers, about the unappreciated "stickiness" of some of their gold foil, but it is to Robert Arthur that we should be grateful for bringing out the principle.

This remarkable man was born near Baltimore in 1819. At the age of fifteen he was thrown upon his own resources and entered a printing office. He was at length induced to commence the study of dentistry under Chapin A. Harris. Entering the Baltimore College, he graduated and received the first degree of "Doctor of Dental Surgery" ever conferred. During the period between leaving school and his graduation in 1841 he, by study and a wide course of reading, acquired a good education which extended to the languages,—Latin, Greek, French, and German.

Dr. Arthur was for a short time in Philadelphia, then removed to Baltimore, practicing in that city in winter and spending his



summers itinerating among the leading planters of Virginia. In 1847 he opened an office in Washington; in 1854 removed again to Philadelphia; three years later returned to Baltimore, where he practiced until his death in 1880. His interest in the subject of dental education was constant and he was dean of the old Philadelphia College and one of the organizers of the Pennsylvania College of Dental Surgery. He wrote a number of articles on dental subjects, one of which, "Prevention and Treatment of Decay of the Teeth," by its peculiar methods of permanent separation, caused a great deal of discussion.

One of the leading dentists of the far South for many years was *Prof. S. P. Cutler*, of Tennessee. He was one of the early investigators and did a great deal of microscopical work. He died in 1880.

*Thomas B. Gunning*, a well-known New York dentist, seems to have been the first to use vulcanite for interdental splints. He gained a great deal of credit by his handling of the case of a distinguished statesman (Seward), whose jaw was fractured in April, 1865. Dr. Gunning was called after a number of surgeons (army and otherwise) had signally failed in the case, and his treatment was successful.

*Dr. Edward J. Dunning* for thirty years held a place in the front rank of the profession. He was born in New York state in 1821 and in 1839 entered the office of Amos Westcott. In 1844 he became and remained for twelve years an assistant to Dr. Eleazar Parmly, of New York. In 1856 he opened an office for himself, remaining in practice until his retirement in 1874 on account of the condition of his eyes. He eventually became totally blind. In 1862 he went to the war as assistant to the Sanitary Commission. During the session of 1867-68 he occupied the chair of operative dentistry in the New York College of Dentistry.

A man of charming personality, fond of art, a member of the Academy of Design, fond of music, of books, and of literature, a deep student of Shakespeare, in 1897, at the age of seventy-six, he published a volume entitled "The Genesis of Shakespeare's Art." Dr. Dunning died March 17, 1901, aged eighty years.

If in Solymán Brown we had a dentist who sometimes wrote poetry, in *Dr. Thomas W. Parsons* we had in our profession a really true poet who sometimes practiced dentistry. A Boston man, he lived much in Europe, and when his fine translation of Dante's "Inferno" was published in 1867 it put him in the front rank of the great Florentine's disciples. His noblest lyric, "On a Bust of Dante," is well known, but for the most part he wrote marvelously finished verse of grace and distinction which poets praised and the public neglected to read. The portrait shown was the frontispiece of the *Century Magazine* for July, 1894, accompanying an appreciative little sketch by Thomas Bailey Aldrich.

It has been said that *Dr. Edward Maynard* (whose portrait, taken in the prime of life, we now see) would have been a great artist in any department of pure art, and his artistic temperament, considering the primitive conditions under which he worked, made him one of the greatest dentists the profession has produced. Born in New York state in 1813, he was educated at West Point and studied civil engineering and architecture. He settled in Washington in 1836 and with occasional absences practiced dentistry up to March, 1890.

He invented a number of instruments and appliances, contributed valuable papers to dental literature, and was the first to describe many methods of practice, some of which have been generally adopted. In 1845 *Dr. Maynard* was employed as court dentist to the imperial family of Russia and was offered a permanent position with title and rank of major, to be attached to the imperial court, on condition of his remaining in Russia for ten years. This offer he declined.

It is interesting to note that he invented and patented from 1845 to 1886 many devices relating to rifles and muskets, including a breech-loading firearm known as the "*Maynard*" rifle. He died in 1891.

*Dr. J. D. White*, of Philadelphia, was long a prominent figure in the ranks of dentistry. He was an early editor of the *DENTAL COSMOS*, a teacher in the schools, an organizer of the older societies and a prolific contributor to dental, and indeed general, literature. He was a strong man, mentally and physically, and achieved a high degree of success. He died in 1895 in the eighty-first year of his age.

No man did more, in his field of labor, for the advancement of our profession than *Dr. Samuel S. White*, born in 1822. His father dying when he was eight years old, he was at the age of fourteen indentured to his uncle, Samuel W. Stockton, whose manufacture of mineral teeth was the first in the United States to attain any commercial importance.

In the year 1844 he began the manufacture of teeth on his own account in the garret of a dwelling at Seventh and Race streets, Philadelphia, uniting with this the practice of dentistry in an office in the same building.

It is unnecessary to speak of the honors which came to *Dr. White*. Being a dentist himself, he took an active interest in all that concerned the profession, identified himself with it, and gave to its advancement the best efforts of his life.

One closely associated with *Dr. White* as the editor of the *DENTAL COSMOS* for many years was *Dr. John H. McQuillen*. He was an operator of recognized skill, a frequent contributor to our literature, an enthusiastic and ambitious teacher, a warm-hearted and true friend. By nature an organizer, it was through this faculty that he became best known to the profession at large. He initiated and devoted himself to the development of the American

Dental Association and to the Philadelphia Dental College, of which he was dean and professor of physiology. He died in 1879.

Let us now look upon the face of one whose residence in New York city was, for many years, the rallying point for the profession from all over the world,—one whose liberality was unbounded,—the great and generous *Atkinson*. He, I think it will be generally admitted, did more than any other one man to establish a fraternal feeling among dentists and to promote the full and free discussion of all matters of professional interest. He was born in Pennsylvania in 1815, graduated in medicine in 1847 and for some time practiced as a physician and surgeon, but becoming interested in dentistry he graduated at the Ohio College of Dental Surgery in 1859. At first located in Ohio, he came to New York about 1861. Dr. Atkinson had few equals as an operator; he revived and taught the proper use of the mallet; he was the preceptor of several noted operators, including Varney. He died at the age of seventy-seven on April 2, 1891.

Before this society it is only necessary for me to present the portrait of *Dr. Wm. H. Drwinelle*,—this man of extraordinary attainments and original powers and one of the most renowned dental surgeons of his time.

Another familiar face is *Dr. Frank Abbott*, for so many years dean of the New York College of Dentistry. An extensive contributor to dental literature, Dr. Abbott did much valuable work as chairman of the section on "Histology and Microscopy" of the American Dental Association. He was an enthusiastic collector of rare prints relating to American history, and his collection was one of the finest in this country.

A name never to be forgotten by dentists is that of *Dr. James E. Garretson*. In his special field of activity he filled a unique place. He was the pioneer in a new department of surgery and the creator of its technique. He brought to the practice of his life-work the skill and manual dexterity of the trained dentist, to which was added the broad culture and intimate knowledge of this subject required by the educated surgeon. The permanent record of his labors is embodied in his greatest literary work, the "System of Oral Surgery," first published in 1869 and which has gone through several editions. The practical development of the surgical uses of the engine is inseparably connected with the record of his surgical work.

Dr. Garretson's intellectual qualities were strongly characteristic. A taste for philosophical and metaphysical study was one of the determining features of his life and it manifested itself strongly in his writings and lectures.

His fluency as a speaker, his intense appreciation of the divinity which doth hedge a man, his kindliness, and his sympathetic nature often gave to his formal lectures and addresses an oratorical quality of high grade.



Dr. Garretson was a contributor not only to the literature of his profession, but to general literature as well, under the *nom de plume* of "John Darby."

A man of distinguished and delightful personality, he always gave us reason to feel a just pride that he was one of our profession. To those of you who knew him it is idle to say more, "for far behind his worth come all the praises that I now bestow."

One of the most representative dentists of the south was *Dr. Wm. H. Morgan*, of Tennessee. Born in 1818, he graduated from the Baltimore College in 1848, at which time there is said to have been but one other graduate in the state; going the next year to Nashville. He organized the Dental Department of Vanderbilt University and held the position of dean for many years.

Among the western men, *Dr. George H. Cushing*, of Chicago, deserves a foremost place. In considering his life-work it is difficult to decide as to the department in which he achieved his greatest success.

His manipulative ability was of the highest order, in the filling of teeth he had no superior, and he was one of the greatest teachers of operative dentistry the profession has ever had.

Another western operator of extraordinary skill was *Dr. Walter Webb Allport*. Born in New York state, he went to Chicago in 1854. It is said that he was the first dentist to take advantage of the cohesive properties of gold for the purpose of restoring the front teeth to their original form when very large portions had been lost by decay.

The next portrait is of a man who wrote very little, did not talk much,—but when he did say anything it was to the point,—and yet by his brilliant personality and his strong character has won an enduring place among the makers of the profession. *Dr. Henry J. McKellops* was one who early saw the advantages of associations, and he was one of the most untiring workers in that direction. No city was too far, no journey too disagreeable, no state of health too poor, to keep him from attending a meeting of his professional brethren. None of the great meetings were complete without him, none of these meetings are quite complete now—without him. A distinguished operator with a characteristic dislike for amalgam and a particular affection for gold and platinum; his influence was always for exact methods and artistic results.

As far back as 1858 *Dr. McKellops* proposed a resolution for the appointment of dentists to the regular army,—the first recorded utterance on the subject. His dental library was famous and at one time was said to be the largest in the world.

These men have passed away, but let us now look at the characteristic portrait of one who, although he began practice in 1839, is still, happily, with us. *Dr. Corydon Palmer*, of Warren, Ohio,

is a most skillful and finished workman, a consummate artist in the filling of teeth with gold, one to whom we are indebted, and have been indebted for more than half a century, for some of our most useful instruments and appliances. He was the first to suggest a system for a distinctively dental notation, which he brought out before the American Dental Association in 1869-70.

We now come to a small but remarkable group of men who have largely contributed by their inventions and splendid examples to make possible the operative dentistry of to-day. Of all the devices at our service, probably the most indispensable is the "rubber dam" presented as a free gift to the profession by *Dr. Sanford C. Barnum*, of New York, in June, 1864. How this simple idea has revolutionized the practice of dentistry need not be told. Dr. Barnum was of a modest and retiring disposition and had a kindly, generous nature. After a brave battle with misfortune and affliction, and the patient endurance of sickness and pain, he died December 24, 1885, aged forty-seven years.

From the hand-drills, drill-stocks, bow-drills, etc., of the early days, it was a great advance when the first of the standard pedal engines was introduced, about 1870-71, by *Dr. J. B. Morrison*.

*Dr. Royal W. Varney*, one of the most remarkable men the profession has produced, was born at Independence, Ohio, October 8, 1839. He studied dentistry with Dr. Wm. H. Atkinson, and afterward, in 1863, graduated in medicine. During the war he was assistant surgeon in the Thirty-first Regiment, Ohio Volunteers, and went with Sherman on his march to the sea. Never a very strong man physically, it is probable that the hardships and exposure of army life contributed to his untimely death. At the close of the war he became associated with Dr. Geo. E. Hawes and afterward located in a house of his own in West Thirty-sixth street, New York city. Dr. Varney received the degree of M.D.S. in 1871, was a member of the Society of Dental Surgeons of the city of New York, of the First District Society and of the American Microscopical Society.

While skillful in the highest degree, resourceful in overcoming difficulties, and having full confidence in himself, he was extremely modest and never boasted. Not merely an expert manipulator, he was thoughtful and studious and sought the causes of the phenomena he observed, working often with the microscope. He was not much of a talker and wrote but little, being one of the kind of men that *do* things. Only two published articles of his are known, one on "Root-Filling," the other (anonymous) on "Cavity Preparation."

So much for the dentist. As a *man* he was inflexible in his integrity, possessing a soul of honor, a gentle and loving disposition, and some of the older dentists to-day remember him as a warm and true friend. He died at Savannah, Ga., in April, 1872, at the early age of thirty-two.

Another young man, for he was only thirty-nine when he died, whose name is always associated with that of Varney, was *Marshall H. Webb*. By his professional brethren he was regarded as one of the brightest, most energetic, and withal, most self-sacrificing members of our calling. As a clinical instructor he stood without a peer, ever eager to demonstrate practically the ideas which he advocated in his published essays. He infused life and enthusiasm among his fellows and was a hearty worker for the success and advancement of the many societies of which he was a member. Though not blessed with a strong physical constitution, he was nevertheless capable of an immense amount of work. His operations were faultless and there was an elegance about their finish which was truly fascinating, and by his example, perhaps, no one has done more to elevate the standard of operative dentistry.

*W. G. A. Bonwill* was born in Camden, Del., in 1838, and from his fourteenth year was, as he expressed it, "doing anything from making a gunstock to a blacksmith's bellows or mending tin pans." He turned to dentistry and in 1866 graduated from the Pennsylvania College of Dental Surgery. It is impossible to enumerate all his practical contributions, but his diamond reamer, his electromagnetic mallet, and more especially the automatic engine mallet, his tooth-crowns, anatomical articulator, and the cord-engine, popularly known as the "Bonwill," must be mentioned. An operator of marvelous speed and ability, both in gold and amalgam, a great mechanician, with all that goes with the artistic temperament as well, the profession he loved has profited by his genius perhaps more than we can now realize.

If we can measure a career by its fruits rather than by its tale of years, then the life of *Henry H. Burchard* has exceeded the vast majority of those who survive him. Born in 1862, it was his father's desire to equip him as a naval engineer, but developing an interest in dentistry he entered, in 1881, a dental laboratory in Philadelphia and acquired a knowledge and much experience in the construction of prosthetic appliances. Three years later, in partnership, he opened a laboratory himself. I call your attention to this to show that as he was a trained, expert workman, no one could say of Henry Burchard that he ever indulged in "prattle, not practice." In 1885 he graduated at the Philadelphia Dental College, where he was afterward a demonstrator of anatomy, and he took his degree in medicine in 1888. After practicing medicine a year or so he returned to his first choice,—dentistry. Dr. Burchard early in his career gave evidence of a high degree of literary ability, his articles covering a wide range of subjects, scientific, philosophical, literary, and artistic. Aside from his many valuable papers in our journals, he contributed to the American Text-books of "Prosthetic" and "Operative Dentistry," and for the latter work he made over one hundred drawings. He published a "Compend of Dental Pathology and Therapeutics" and in 1898 his more elaborate work on the same subject. He had in preparation at the time of his death a work on "Comparative Dental Anatomy."



And, with all this, he was an active worker in our societies and a brilliant and beloved professor in his college. His physical strength was wholly disproportionate to his nervous energy, and another life was sacrificed for the good of his fellow craftsmen. Kind, affectionate, and loyal, let us ever cherish his memory.

It was no more than right that after the early men that France sent over to this country, we should return the compliment with, perhaps, the most popularly known dentist of his time, *Dr. Thomas W. Evans*, of Paris and Europe. He studied with *Dr. J. D. White*, practiced for a short time in this country, and then went to France and entered into partnership with the celebrated *Dr. C. Starr Brewster*. About 1850 he opened an office in the Rue de la Paix and entered upon a career which was wonderful, unique, and too well known to need repeating here. This portrait was taken during his recent visit to this country and is probably the last one he ever had taken.

Another early American dentist in Paris was *Dr. B. J. Bing*, who as far back as 1869 is said to have originated the "idea of employing the natural teeth on either side of a dental vacancy as abutments of a prosthetic bridge, firmly and permanently fixed to those teeth and carrying an imitation tooth or teeth which, while conforming to the process vacated by the removed tooth, was yet kept from resting upon the gum and was wholly supported by the abutting teeth." This was called the "Bing bridge," and the invention embodied the fundamental idea of the modern permanent bridge, of which many of the subsequent forms of practical bridge-work are modifications.

While most of the life-work of *Emile Magitot* related to the study and care of the teeth, he did not consider himself a dentist. He loved theory and cared little for the manual ability of the operator; therefore, it is chiefly as a scientific worker that the profession is indebted to him. During the forty years of his career he wrote no less than sixty-five books, essays, pamphlets, etc., dealing with nearly every phase of dental science. At the time of his graduation in medicine, at the age of twenty-four, his thesis was on "The Development and Structure of the Teeth"; later appeared his work on "The Evolution of the Teeth in Man and the Lower Animals," and in 1857 he published his great work on "Dental Anomalies." It has been said that no writer of any age has made as many, as varied, or as valuable contributions to dental science as *Magitot*.

If the last Frenchman cared, perhaps, too much for theory, this German, *Dr. Wilhelm Herbst*, of Bremen, in his methods for the working of gold, his little appliances and instruments, his inlays of pulverized glass, etc., was certainly a most intensely practical man in his way of personally overcoming obstacles as they occurred, without waiting for outside help. Many of you will remember pleasantly his visit to this country in 1886.

It is given to but few men to shine brilliantly in several lines, but whether viewed as a practitioner, a scientific investigator, or as an exponent of a higher and more liberal educational standard in dentistry, *Sir John Tomes* was a leader. Born in Gloucestershire, England, in 1815, he began the study of medicine in 1831. While house surgeon at Middlesex Hospital he invented forceps adapted to the necks of the different teeth, which caused Sir Thomas Watson to advise him to adopt dental surgery as his profession.

In 1840 he commenced practice in London. In 1845 he invented a machine for copying in ivory irregularly curved surfaces which obtained the gold medal of the Society of Arts. In this year also he delivered a course of lectures at the Middlesex which marked a new era in dentistry, and which, when published in 1848, at once made his reputation as a scientific observer.

In 1850 Jno. Tomes was made a Fellow of the Royal Society as being "distinguished for his acquaintance with the sciences of anatomy and physiology."

In 1859 he published his well-known "System of Dental Surgery."

As far back as 1843 he had joined with a few leading dentists in asking that the College of Surgeons recognize the claims of dentistry to be considered a department of general surgery. The attempt at that time failed, but he continued his labors and interest in the cause until its object was accomplished in the year 1859. In like manner his interest and activities were enlisted in the movement toward making the new standard of dental education obligatory by appropriate legislation. With untiring zeal he worked with others to that end, and in 1878 the "Dentists' Act" became law.

In 1883 the very high honor of honorary fellowship in the College of Surgeons was conferred on Mr. Tomes. The College having the right to confer its fellowship upon but two persons annually, Mr. Tomes and Prof. Huxley were selected as representative men of science.

In May, 1886, he accepted and received the honor of knighthood, "for eminent services rendered his profession."

Sir John Tomes, during the course of his career, filled the highest positions within the gift of his colleagues, and in each of these he evinced the qualities of leadership and capacity which raised him to the highest place in their esteem. He died July 29, 1895, in the eighty-first year of his age.

To his son, *Mr. Charles S. Tomes*, F.R.S., F.R.C.S., L.D.S., we are indebted for researches of a great deal of scientific and practical value and for his "Manual of Dental Anatomy, Human and Comparative." With the latter, there is no single work that can divide honors, and probably no living man is so well qualified on all points to write exhaustively on this subject. In 1898 Mr. Tomes was appointed crown representative for five years on the General Medical Council of Great Britain, which, aside from the personal honor, had great significance in that it made an important step in the acknowl-

edgment by the public, and particularly by the medical profession, of the claims of dentistry to recognition as a professional calling.

Another distinguished English dentist was *Sir Edwin Saunders*, who died in March, 1901, aged eighty-seven. Early showing a bent toward dentistry, he turned to it as a means of livelihood, and started practice in London. Such was his natural ability that in 1839 he became an M.R.C.S., and later was appointed dental surgeon and lecturer at St. Thomas' Hospital, London. In 1846 he received the court appointment, and was surgeon-dentist to Queen Victoria from that time until her death. He was president of the dental section of the International Medical Congress at London, twice president of the Odontological Society, and in 1881 was president of the Metropolitan Branch of the British Medical Association. In 1883 he was knighted by the Queen.

To *Samuel Lee Rymer*, of Croydon, another prominent English dentist, unquestionably belongs the credit of having first instigated a thorough and complete reform movement in the dental profession of England, when he called a public meeting of dental practitioners at the London Tavern, September 22, 1856. As Mr. Rymer modestly says in his pamphlet, entitled "The Dental Profession, Its Present Position and Future Prospects," published in 1859, "my own share was, after all, not a great one, although its results have been important. The step of calling the public meeting at the London Tavern was a bold one and would have laid me open to undying ridicule had it failed, and it was braving this possibility,—which might have been done by anyone else,—where all my credit lay."

The next portrait is of *John Smith*, M.D., LL.D., F.R.C.P. Edin., consulting dental surgeon to the Edinburgh Dental Hospital and School, and probably the most representative dental surgeon of Scotland. Dr. Smith has written extensively on dental subjects, one of his first papers, published in 1852, being on "Dental Caries and the Preservative Influence of the Saliva in that Disease." His "Handbook of Dental Anatomy and Surgery" appeared first in 1864. Dr. Smith also wrote the article on "Dentistry" for the ninth edition of the "Encyclopædia Britannica." I am happy to say that he still lives, a prosperous gentleman.

Within the past year so much has been said about him in our journals that I feel sure you will be interested in this characteristic portrait of the great physiologist, *Sir Michael Foster*, in his study. In an address of welcome to the International Dental Federation at Cambridge University last August, Sir Michael made, Dr. Kirk says, "a statement of the principles of dental education the most liberal, logical, and reasonable which, in my judgment, has yet been uttered anywhere."

I will now close my long paper with the portraits of three men,



all well known to you, all Americans I am proud to say, but only one of whom lives in this country:

*Prof. G. V. Black*, of Chicago.

*Dr. J. Leon Williams*, of London, England.

*Prof. Willoughby D. Miller*, of Berlin, Germany.

## ANIMAL ALKALOIDS.

BY J. S. CASSIDY, M.D., D.D.S., COVINGTON, KY.

(Read before the Odontological Society of Cincinnati, September 26, 1902.)

THE study of animal alkaloids, their origin and ability to induce chemical changes in the body, and their consequent influence on the varying processes of health and disease, has not been altogether neglected by physiologists and pathologists, and should be of more than passing interest to the studious dentist.

Animal alkaloids and vegetable alkaloids are essentially similar in their general chemical nature; they all have ammonia ( $\text{NH}_3$ ) for their prototype, and like the latter, when combining with acids to form salts, the H of the acid is not removed. Some of them are intensely poisonous, others not so, as we can easily realize by recalling the qualities of familiar examples from the vegetable, such as atropin, cocain, and quinin.

We do not find the line of demarkation between those kindred families of the animal and vegetable kingdoms at all sharply defined; in fact, as stated by Vaughn and Novy ("Ptomains and Leucomains," p. 225), there seem reasons for considering their formation to be due to the same causes which bear an intimate relation to the physiology of the cells and tissues of both kingdoms.

The convenience of dividing the alkaloids of animal origin into two classes is evident; first, those which are developed by disease or putrefaction are known as ptomains; and second, those formed in the body by physiological chemical changes have received the name of leucomains ("Appleton's Chemistry," p. 166).

Ptomains were first described as definite chemical compounds by Selmi, of Italy, in 1873. They are regarded in the main as the product of bacteria working in albuminous matter. Infectious diseases are now thought to be caused by the toxins (poisonous ptomains) formed by the growth, multiplication and degeneration of micro-organisms in the living body. But certain ptomains, for instance neurin ( $\text{C}_5\text{H}_{13}\text{NO}$ ) can be obtained by synthetic processes, although its usual origin is in putrefying meat; and Simon ("Manual of Chemistry," p. 439) says that cadaverin ( $\text{C}_5\text{H}_{14}\text{N}_2$ ), although the natural product of the growth of the comma bacillus, is capable of producing intense inflammation, necrosis, and suppuration in the absence of bacteria. It would seem, therefore, that the presence of bacteria is not always an absolutely necessary factor either in the formation of ptomains or the development of pus. Moreover,

some of the amins, which class of compounds is included with ptomains because of similar chemical nature and common origin by putrefaction, can readily be obtained by mere chemical interaction. These exceptions, however, do not disprove the general rule of origin, but they do prove that it is not safe to assert exclusiveness of production in only one way, of substances of which C and N are chemically involved.

These amins are of more than passing interest, not only for their own intrinsic properties, but especially for the possible, nay probable, part they and their congeners, the amids and nitrils, play in disturbing the integrity of zinc phosphate fillings and in influencing in the body the formation of cyanids and cyanates.

The amins are so named because they are direct derivatives of ammonia, and may be defined as consisting of the latter substance with one of H, or two, or all three atoms of H, replaced by alcohol radicals. They are strongly basic so long as the alcohol radical is univalent, like methyl ( $\text{CH}_3$ ), ethyl ( $\text{C}_2\text{H}_5$ ), etc., but where all the H is replaced by trivalent alcohol radicals like methenyl ( $\text{CH}$ ) the resulting nitrils are generally neutral. The first member, however, the simplest in composition, is acid; thus methenyl nitril ( $\text{NCH}$ ) when transposed is hydrocyanic acid ( $\text{HCN}$ ), and by analogous transposition neutral ethenyl nitril ( $\text{NC}_2\text{H}_3$ ) becomes methyl cyanid ( $\text{CH}_3\text{CN}$ ).

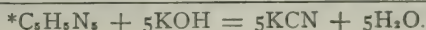
Dr. Michaels, who claims that chemical erosion of the teeth is due to potassium sulfocyanate ( $\text{KCNS}$ ), evidently does not have to appeal much to his imagination for the presence in human saliva of cyanogen compounds.

The leucomains also may, in given cases, serve as prolific sources for development of cyanates. This is regarded as particularly probable, with the uric acid group of leucomains, namely adenin, guanin, hypoxanthin, and xanthin, and also uric acid, while urea ( $\text{CO}(\text{NH}_2)_2$ ) is metameric with ammonium cyanate ( $\text{NH}_4\text{CNO}$ ). Adenin ( $\text{C}_5\text{H}_5\text{N}_5$ ),\* when it is acted on by potassium hydroxid ( $\text{KOH}$ ) at a temperature of  $200^\circ$ , yields potassium cyanid ( $\text{KCN}$ ), and potassium cyanid heated with S ( $\text{KCN} + \text{S} = \text{KCNS}$ ) becomes potassium sulfocyanate ( $\text{KCNS}$ ).

According to all authorities consulted, we must look to nuclein, the active chemical principle of nucleated cells, as the immediate parent of the uric acid group of leucomains.

Kirkes' "Physiology" (p. 521) holds that inasmuch as muscular tissue is poor in nucleated cells, we should not regard its metabolism as productive to any important extent of this class of alkaloids. Muscular metabolism, however, we may say in passing, develops bases of the creatin group, as well as sarcolactic acid, glucose, etc. Free exercise, therefore, would not likely tend to increase the uric acid dyscrasia.

Nuclein is a highly complex substance, consisting of a union of bases with proteids rich in phosphorus. It should be remembered that the splitting up of the complex molecule into simpler molecules is a definite physiological process, and that chemical changes in the



*Adenin.*

living body can, and do, occur at a much lower general temperature than is requisite for analogous changes by outside experiments.

Under certain conditions of increased metabolism a greater quantity than usual of characteristic alkaloids may be produced; the vital function of a part is thus interfered with, probably to a large extent at the expense of phagocytic energy, for nuclein is the best weapon of the phagocytes. The officers of the fort (*i.e.* the nerves governing) become uneasy; cowardice and incompetency (the neuroses of pathologists) permit a wasting of the normal ammunition for attack and defense, and the contest goes on with varying fortune, according to the reinforcements that may come to either side. Thus, under the influence of predisposing diatheses, an over-production for a given period of perfectly legitimate physiological sequelæ, such as carbon dioxid, sarcolactic acid, glucose, leucomains, etc., determines consequential so-called local diseases in disinterested parts heretofore exempt from trouble.

It is a truism that the cell of the living organism possesses almost unlimited power in its management of chemical affinities, and when we think of the possible thousands of compounds susceptible of production in the body by retrograde metamorphoses alone, it is not too much to say that cyanogen compounds may, at certain times, appear in extra quantity and energy, and that their presence is due mainly to the reduction of a portion of an over-supply of leucomains.

As already stated, the molecule of adenin—

$C_5H_5N_5$ .....	Adenin.
$C_5H_5N_5O$ .....	Guanin.
$C_5H_4N_4O$ .....	Hypoxanthin.
$C_5H_4N_4O_2$ .....	Xanthin.
$C_5H_4N_4O_3$ .....	Uric acid.

—is a pentapolymer of hydrocyanic acid. The other bases of this group, including also uric acid, are closely related, differing from adenin only—in the case of guanin, by the addition of one atom of oxygen, and in the cases of hypoxanthin, xanthin, and uric acid, by the substitution of one, two, and three atoms of oxygen respectively for imidogen.

Dr. Michaels says (*International Dental Journal*, vol. xxi, p. 322) that “the characteristic features of the rheumatic diatheses are diminished urine and diminution of all normal urinary constituents together, and the appearance in saliva of uric acid derivatives, sulfocyanates, and oxalic acid, varying from two to seven times the normal,” also that “chemical abrasion of the teeth is due to constant contact of secretions from the labial glands.”

He did not find erosion present where the saliva contained ammonium sulfocyanate, “while those whose teeth were thus affected” invariably had in their saliva potassium sulfocyanate. Therefore he considers the latter compound the cause of dental erosion, and as he experimented laboriously and conscientiously before reaching that conclusion, let us freely give him the benefit of any doubt as to the value of the discovery. The writer, however, cannot indorse the recommendation of neutralizing his “hyperacid dys-



crasia" by systemic exhibition of alkalis. This treatment may answer temporarily, but it will not remove the predisposing causes. for it is well known that glands which normally secrete acids will increase their output enormously, if fed systemically on alkalis, and will diminish their activity by an acid treatment. I should expect in such instances to secure greater benefit by adopting the homeopathic dictum than by following the old idea of using the living organism as though it were made up of test tubes and retorts.

Dr. Michaels, however, in recommending the alkaline treatment simply agrees with the practice handed down from time immemorial, and therefore should not be criticized. Indeed, he should, and will be, greatly honored for the work he has already done, not only for his investigations looking to the causes of dental erosion, but also for boldly advocating the just claims of the saliva as a much better medium than the urine to submit to examination for the purpose of ascertaining the status of health and disease,—because, as he says, "the saliva is swallowed again and again" as it is secreted, thus repeatedly entering and leaving the circulation, keeping in touch with the mystic music of the molecules, and so it is enabled to select from the blood those dialyzable substances which indicate by their presence or absence either a normal or an abnormal condition of a part or the whole of the organism.

Dr. E. C. Kirk, in his own deliberate way, is following Dr. Michaels along the same lines of salivary investigation. He described a case of general erosion (*Items of Interest*, July, 1902) where all the surfaces of the teeth were being dissolved. The saliva in this case indicated, by the use of the micro-polariscope, the presence only of lactates and lacto-phosphates, with traces of acid sodium phosphate and acid calcium phosphate. As these latter salts, being exudates from abnormal buccal mucous glands, could cause only localized erosion, Dr. Kirk reached the inevitable conclusion that this particular case of erosion, being general, was due to the solvent action of lactic acid.

And so these two of our eminent and friendly brethren, using the same methods of examination, discover different active agencies at work in producing similar serious injury on the teeth; and both gentlemen are correct, for the evidence in each case, showing different substances in the saliva, proves that the subjects were not alike,—differing perhaps for the time being, at least, by some elusive systemic neurosis.

This non-agreement as to the effects and causes is rather more encouraging than otherwise; it suggests to some extent the wide field of sialo-semeiology, and it is especially gratifying that dentists are the pioneers in exploring its almost untrodden paths. Dentists may examine saliva as much as they please, and still retain their self-respect. Other specialists, and also general practitioners, will take advantage of, and add to the list of, collected facts; and as truths of diagnosis now hidden are made plain by increasing knowledge, it will be found that the careful consideration of animal alkaloïds will play an important part in the satisfactory elucidation of certain phenomena connected with this extensive subject.

## EDUCATIONAL SYSTEMS.

BY W. C. BARRETT, M.D., D.D.S., M.D.S., LL.D., BUFFALO, N. Y.

(Read before the International Commission of Education of the International Dental Federation, at Stockholm, August 16, 1902.)

MR. PRESIDENT AND GENTLEMEN, MY HONORED COLLEAGUES:

WE meet here in the mutual endeavor to establish universal professional comity. The representatives of many nationalities are gathered to magnify the semblances and to minify the differences that exist among us. Our earnest desire is to agree upon some common ground on which all may meet in harmony, to perfect some form of organization that shall know no language, speak no tongue save that of fraternity. Dentistry has grown too great to be confined within the bournes of nations or to be limited by rivers and seas. There should be no such thing as American, or English, or German, or French dentistry. Whatever may be the national fealty of each, our professional allegiance is as wide as civilization. If we are true healers, if we follow in the footsteps of the Great Physician who went about doing good, we are necessarily inspired with a sentiment which makes Russian and Italian, Spanish and American, the people of the Occident and of the Orient, brothers in heart, each entitled to fraternal recognition and welcome.

This has not always been accorded in the past. The mere crossing of a river or a chain of mountains has too often deprived man of his professional family rights, and national prejudices have sometimes been thrust between the outstretched hands that would otherwise be clasped in mutual sympathy and love. It is but right and proper that caution should be exercised in extending professional fellowship,—that the unworthy, who may be found everywhere, shall not usurp places in the family circle; but surely there should be some common ground on which all who deserve the name of dentist may meet as peers.

No one can of right be accorded fraternal recognition unless he shall primarily have received proper professional training. It is the province of the professional school to furnish this and to prepare the neophyte for entrance into the organized solidarity. For the attainment of this universal professional harmony, there should be some generally accepted curriculum of study, for the future dentist must be what the school shall make him. There can be no international professional affiliation until an international standard shall have been agreed upon by which all may be judged. To facilitate such general understanding this meeting of representatives from all countries having a systematized method of dental practice has been called. In this view I believe it pregnant with more of interest to dentistry as a whole than any meeting ever yet held. Were I not thoroughly convinced of this, I should not have crossed an ocean to attend it.

But I apprehend that its greatest possibilities cannot be compassed without first comparing the different national systems of organization, in the sincere desire to select from each those features

which are wisest, that a composite whole may be created to be in due process of time adopted as the common ground upon which all may stand, and through which the desired international comity may be established. For this purpose, and for this alone, allow me to attempt an exposition of the professional organization as it exists in the country which I have the honor in part to represent.

As an established system of practice, dentistry is of quite modern origin. It is true that operations upon the teeth were performed as early in the history of mankind as were those upon any other part of the human body, but until within a recent period they either constituted a part of the regular medico-surgical procedure, or were entirely empirical, without system or recognized method. It was not until about the year 1838 that any attempt was made to reduce to a methodical form the heterogeneous elements that have since crystallized into the professional practice of to-day. It is a mere matter of well accepted professional history that this work was begun in America by Chapin A. Harris and his compeers. But as there were no established precedents for the guidance of those pioneers, and as medicine then declined to assume the recognition of the comparatively crude operations of that day as professional, the men who had undertaken the task of establishing a definite curriculum of study necessarily groped in the dark and made errors possible. It should be recollected that they had not the illumination of our modern advancement to guide them. There was no dental literature, there were no dental societies, and dental instruction then consisted solely of carefully guarded recipes, formulæ, and methods imparted by self-taught preceptors for a stipulated sum of money.

Dr. Harris was eminently one of those practical prophets who can successfully forecast the future. Even at that early day he foresaw the tendency of the great profession of medicine to divide itself into specialties, and in the heterogeneous dental methods then in existence he recognized the elements which, reduced to an organized system, might comprise a distinct branch of practice. It was his conception that this should be erected into a clearly defined specialty of medicine, the curriculum of study to be pursued in a medical school, the medical degree to be the qualification. He with others formulated distinct plans, and petitioned the University of Maryland, located in Baltimore, to establish certain chairs, the incumbents of which should give instruction in the filling of carious teeth and the manufacture and adaptation of prosthetic appliances. Had these proposals been accepted, dentistry in America would to-day have borne the same relation to the mother profession that ophthalmology does,—the dentist being a medical man with a considerable element of mechanics engrafted on his practice.

But the medical school to which application was made took high professional ground, and after due consideration made answer that, as the dental practice of the day was almost exclusively mechanical, and as the work of the artisan could form no part of medical instruction, the student who pursued the proposed course would not be entitled to the medical degree, and therefore the proposition must be declined.



There then remained but the choice between two other alternatives,—the one to organize separate schools and institute a distinct degree or qualification, the other to drop the mechanical part and allow it to be carried on by artisans who would have no claim to be considered as professional men. Later, when the treatment of diseases of the eye was established as a separate branch of practice, the latter course was pursued. Instruction in ophthalmology was given in a medical school, and the medical degree or diploma was made the qualification, while the mechanical work connected with it, the fitting of lenses and artificial aids to sight, was entrusted to an artisan who had no professional qualification or affiliations, the ophthalmologist preparing a formula which the optician filled.

But the first organizers of dentistry in America believed that the prosthetic department of dental practice must form too important a part of it to be entrusted to an irresponsible mechanic. The work of what in America is called the operating room, and which in Europe is denominated the surgery, the prophylactic insertion of fillings and the mechanical conservation of the natural teeth, was too much an integral part of dental practice to be entrusted to anyone save the dentist himself, and therefore the alternative of relegating all mechanical operations to the handicraftsman was rejected, and the plan of the separate school and distinct diploma of qualification was adopted. During the early years of dentistry in America all the colleges were thus established as segregated ones, and so our oldest dental schools have no direct affiliation with medicine.

The results of this plan of procedure were very soon manifested in two directions, the one distinctly good and the other as manifestly evil in its tendency. As operative and prosthetic work were given a degree of respectability and professional recognition by the new system of instruction, inventive talent was stimulated and ingenious devices and methods were introduced, the mechanical operations were of necessity greatly improved, and the name "American dentist" became a synonym for operative skill and dexterity. His inventions and improvements were almost without number, and what we denominate operative work was carried to a high point of perfection. This was the great good that was brought about by the so-called American system of organization and instruction.

But there were also baneful influences inseparable from it. The separation from medicine, the instituting of a distinct degree, removed the young practice from the restraining influence of the mother profession, and tended to produce moral laxness and a depression of the ethical tone. Professional lines were obliterated or obscured, and methods legitimate only to trade became too common. There was no rigid rule governing admission to the segregated schools, whose maintenance depended solely upon the fees paid by students, and the mercantile influence began to manifest itself. Illiterate students were received and graduated, and this tended yet further to lower the standard of professional respectability.

There is, however, no questioning the fact that many of these unlettered recruits, impelled by that laudable ambition which incites men of genius to raise themselves above the condition in which adverse fortune may have placed them, debarred from pursuing real scientific study by their lack of a liberal education, turned their repressed energies toward the practical, and earned fame and fortune and the undying gratitude of all lovers of progress by their inventive talent displayed in carrying operative work to that high pitch of perfection. But the very fact that much of this was done outside professional lines tended yet more to efface the ethical distinctions dear to the heart of every professional man.

This condition continued in America until the profession of medicine itself, beginning to recognize the possibilities that existed in dental practice, and incited by dentists who were alive to professional claims, set about the task of correcting previous errors, and dental departments were organized in universities having medical schools. About the same time the teachers, themselves recognizing the evil tendencies then in existence, came together, perfected an organization, and established rules for the government of all the schools. This association so strongly appealed to the sense of right of every honest American dentist, that it very soon became sufficiently powerful to discipline offenders and to restrain the evil tendencies of the time. That body, the National Association of Dental Faculties, has complete ascendancy to-day, and it has succeeded in suppressing most of the irregular schools and in steadily raising the standard of efficiency of its membership, which includes every recognized dental school in America, until cheap and inefficient dental instruction is becoming a thing of the past.

There is yet a question in dental education that has not been answered to the satisfaction of all, and that is whether it were better that dental students should receive their medical instruction in the same classes with students of medicine, or whether, inasmuch as they are to practice a specialty, their instruction should not in a manner be specialized. Those who insist that dentistry is and must ever remain an integral part of the mother profession are urgent for the former course; those who believe that dental practice is only closely related to medicine, without being in any sense identical, declare for such chemical, anatomical, and histological instruction as shall be best adapted to the exigencies of dental practice.

Permit me now for a few moments to turn to the organization of dentistry and dental teaching as commonly observed in Europe. The same problems confronted the pioneers there that had been encountered in America. Medicine could not consistently adopt as a part of its curriculum anything mechanical. Handicrafture was supposed to be antagonistic to professional sentiment. Hence, if dental teaching was to be conducted in strictly medical schools, that part must be eliminated. It was deemed essential that the professional relation be maintained, or dentistry would be likely to degenerate into a mere trade. So the mechanical was segregated from the medical, as optics has been separated from ophthalmology. The accepted instruction became entirely medical, and the licensing

power was in most instances vested in medical boards. As the curriculum of study was not sufficient to permit the medical qualification to be given, the practice must necessarily be subordinate to that of medicine. But as it was recognized that the dentist must have a knowledge of the practical, and that his daily routine of work must embrace both therapeutics and handicrafture, this was in general provided for by requiring instruction for a definite period at the hands of a preceptor, thus presenting the anomaly of making a portion of his practice professional, while that upon which he must largely depend for support had no professional recognition whatever.

And herein, I apprehend, lies the essential difference between the American and the European systems of dental organization and instruction. It has in the past been impractical for either to give full recognition to the educational courses of the other, and hence there has been but little of real interchange of professional courtesy or comity. In America, under our system, we can accept no instruction as professional which is not given by men having direct connection with the responsible faculty of the qualifying institution. The teaching of prosthesis is an integral part of the school curriculum, its methods are under faculty supervision, and the examinations in this department are conducted precisely as are those in the medical branches. Under our present school methods we can give no recognition to the system of indenture so common in Europe.

On the other hand, American courses of instruction are not accepted in Europe, because it is urged they are not strictly professional. The teaching is not always given by recognized medical instructors, nor in strictly medical classes. The examining authorities have no direct medical affiliation and the license to practice is not subject to medical supervision. As I comprehend it, the objection is that too often dentistry is not professionally taught because it is segregated from professional medicine and made a thing by itself. In other words, America will not accept European courses because a part of the instruction is outside the dental college authorities, while Europe rejects the American because it is not. The European curriculum must either be strictly medical or extra-professional, while the American must be wholly collegiate but not necessarily medical. The one is identical with medicine, the other only closely affiliated.

There may appear to be special advantages in both systems. Their differences are not insurmountable. A spirit of mutual conciliation and good will, a sinking of the asperities too often connected with national characteristics, a sincere desire to discover some mutual ground common to both and to establish a system of education and practice that shall organize the dentists of the world into one great homogeneous profession, might easily devise a universal curriculum of preparation that shall be a passport to all dental circles and make every worthy practitioner the colleague of every other, irrespective of name or tongue. This certainly is a consummation devoutly to be wished, for it would be a long step toward the millennial day when man shall no longer seek the de-



struction of his fellow man, or labor for his physical or moral downfall. If this great meeting shall do anything to facilitate that end, it may take its place in history as one of the most important ever convened.

## RESTORATION OF THE INCISIVE EDGES OF THE ANTERIOR TEETH WITH PORCELAIN.

BY LEVITT E. CUSTER, B.S., D.D.S., DAYTON, OHIO.

**T**HIS operation is not new; however, the details as herewith presented may possess some merit. Cases of fracture and defective development of the enamel of the incisive edges of these teeth generally call for restoration without the removal of the whole crown of the tooth. Conditions indicating a porcelain tip are those happily medium between a small gold operation and a full porcelain crown. This operation is not advised where but a mere film of porcelain would restore the contour, for a gold and platinum filling would there be better. *Porcelain, to have strength, must have bulk.* Veneers, thin pieces, and edges in exposed positions, are the ruination of porcelain work. The indications for the practicability of a porcelain tip are where from one-fourth to one-half of the crown is missing.

The first step is the dressing of the edge of the tooth with a stone to a symmetrical outline. A straight line across the labial surface is better than a curved one in this work.

The second step in the preparation is for the anchorage of a single pin, if the tooth is pulpless, or a U-shaped staple, if the pulp is alive.

Where the pulp is absent the pin should be shaped as diagrammed in Fig. 1. This is easily effected by bending a piece of 20-gauge platino-iridium wire upon itself and filling the point with Ames solder, gold eighty parts, platinum twenty parts. The enlarged end should be almost as wide as the dentin at the edge, and the solder should not entirely fill the loop, for reasons that will appear. The pulp-canal should be enlarged laterally to receive the large end of the pin up to an imaginary point where the horizontal wire will come about the middle of the completed tip, as shown in Fig. 2.

A piece of platinum foil, a little larger than the end of the tooth, is slit in the middle to receive the pin. This is placed on the end of the tooth and the pin pushed through to its seat. The two are then united with the smallest bit of pure gold that can be handled. (Fig. 3.) Only one wire need be soldered in this manner. The piece is then returned to the tooth and the platinum carefully adapted to the end. If platinum about twice the thickness of that used for inlay work be used it will be found easier to manage, and the extra thickness will not materially affect the final fit in this operation.

In those cases which present with a live pulp, the following course is to be followed: Two holes are drilled with a No. 2 bur in a parallel direction between the pulp and the enamel, to about the

depth indicated in Fig. 4. In drilling these holes they should both be drilled at the same time by making purchase with the fingers on the neighboring teeth and lifting the bur from hole to hole, alternately drilling a little in each. In so doing the holes will be parallel and of the same depth, and there will be but little pain.

A U-shaped staple, of 20-gauge platino-iridium wire, is bent as

FIG. 2.

FIG. 1.

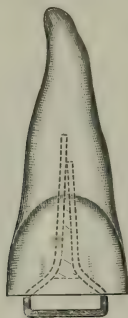
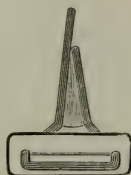


FIG. 3.



shown in Fig. 4. This is fitted into the holes and the ends are cut off to such a length as to bring the horizontal part to about the middle of the completed tip. A piece of platinum, as before described, is placed over the end of the tooth and punctured over the holes in the dentin. The staple is then forced to its seat and the whole removed, and soldered at one end with a small particle of pure gold. (Fig. 5.) It is then returned to the tooth and the foil adapted to the incisive edge.

FIG. 4.



FIG. 5.

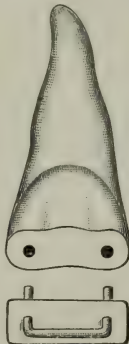


FIG. 6.

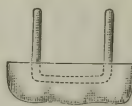
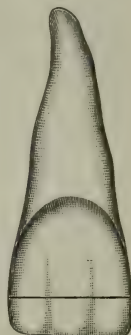


FIG. 7.



We now have what may be called the matrix for the porcelain tip for either a pulpless or a live tooth. Porcelain of a dark yellow color, "Close" finely ground, or "Brewster" body No. 13, is now packed about the loop so as to represent the dentin of the tooth in color and contour. This is baked, the piece fitted to the tooth, and the edges of the platinum again adapted to the enamel. It is then

removed and porcelain to match the neighboring teeth is added, to the extent of over-contouring. It is then fused.

If the over-contouring of this layer has been sufficient, the shrinkage will have reduced it to about the proper proportions. (Fig. 6.)

The platinum is then carefully stripped from the porcelain, and after dressing a trifle from the ends of the pins to compensate for the thickness of the platinum matrix, the piece is set with cement in the usual manner and dressed. (Fig. 7.)

Such an operation, if the porcelain be not too thin, will not only present a good appearance, but will be quite as serviceable as any other method of restoration. It is much easier performed than the average porcelain inlay and the discouraging shadow problem is not present to any extent.

---

## PROCEEDINGS OF SOCIETIES.

---

### INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION. SECOND GENERAL MEETING, HELD AT STOCKHOLM, SWEDEN, 1902.

#### INTERNATIONAL DENTAL FEDERATION.

WEDNESDAY, AUGUST 20, 1902.

THE opening session of the second general meeting of the International Dental Federation was held in the Caroline Institute, Stockholm, Wednesday, August 20, 1902, with Professor Lindstrom in the chair.

Professor LINDSTROM in fitting words welcomed the members of the Federation.

Dr. ELOF FÖRBERG then addressed the Federation in behalf of the local committee, expressing in eloquent terms the satisfaction of the Swedish Dental Society in having the Federation meet at Stockholm.

After these preliminary proceedings, Prof. CH. GODON, Paris, delivered his presidential address, as follows:

#### PRESIDENT'S ADDRESS.

*Mr. Chairman, Ladies and Gentlemen,*—As we are about to begin the sessions of the International Dental Federation, our thoughts are naturally carried back to our last and memorable meeting in the University of Cambridge, just a year ago,—a meeting the remembrance of which will never be erased from the minds of all who attended it. It seems to me that this meeting could not be more appropriately opened than by addressing our most cordial and respectful greetings to Sir Michael Foster, the eminent scholar who honored us last year by presiding over our gathering. It was at that session that we were invited by our friend and colleague, Dr. Förberg, in behalf of the Swedish Dental Society, to hold our present meeting in the city of Stockholm; and I can assure you that their hospitality is greatly appreciated by all of us. We should



not forget that while our work has a scientific and professional purpose, it is also a task of peace and universal harmony, and under the auspices of what country other than Sweden could gatherings of this nature be more properly held? Sweden should feel a proud gratification in the reflection that the name of Dr. Alfred Nobel, the object of whose untiring efforts has been to promote ideas of peace and universal fraternity, stands out among the contingent of learned men that she has furnished to the world. All scientific and industrial associations, the number of which can never be in excess, uniting periodically upon the same spot men from countries different in language and habits for the purpose of discussing scientific topics for the better development of the different branches of human activity, must be counted among the number of institutions that have contributed in the largest degree to inculcating peace and fraternal sentiments among men, and therefore we could not do anything more fitting than to place this gathering under the tutelary patronage of that great human benefactor.

We are happy to express to the Swedish Dental Society our heartfelt thanks for their kind invitation and for the warm welcome they have tendered us, but to Professor Lindstrom are we especially indebted for consenting to honor our association by presiding over its meetings. We should feel complimented that, following Professor Gariel and Sir Michael Foster, who were the presiding officers at the organization of the Federation and at its first meeting respectively, we should be able to-day to open our first session with Professor Lindstrom in the chair, and that under these auspices the Federation should step forward in the path assigned to it.

Our sessions beginning under auspices of this nature cannot fail to be successful. Delegates are present in considerable number, and the questions to be discussed are numerous. We are glad to find among the delegates the majority of those who took part in our last year's discussions, and no other body of men could be better qualified to treat of the general questions that are of foremost importance to the future of dentistry. Others have come to join our force; to them we extend our most cordial thanks. We wish also to express our appreciation to the members of the American Dental Society of Europe, as they will have a considerable share in increasing the importance of the session,—first because of the part they will take in its work, and also because they have consented to hold joint sessions with us and with the Swedish Dental Society,—reunions which will make of this week a memorable one, as during this extent of time it will undoubtedly be possible to treat of questions belonging to all the branches of our special calling. We also thank the authors of the different communications for the earnestness with which they have treated the questions they undertook to study, and their reports will serve as a basis to the work of the present session.

Last year, at Cambridge, we had before us the completion of our organization, the adoption of a constitution, the appointment of the necessary committees, and the planning of our future line of work,

it being necessary to define the field of action of the Federation and also to reassure all those who feared any interference on our part with national affairs; in one word, to limit the field of activity in which we could exercise our influence without fear of wounding legitimate susceptibilities. Each country depends on its habits, historical evolution, and laws, and, as all these conditions differ greatly, our International Commission cannot pretend,—as our colleague, Professor Hesse, of Leipzig, has stated,—to do anything beyond expressing opinions and giving advices which have no real authority, but which have, however, a certain moral influence because of the standing of the members of the Federation, and may therefore be taken into consideration by those qualified in each country to voice decisions of legal power. Your functions are hence limited to those of a great international advisory council on dentistry. The discussions have been kept within the bounds of theory and philosophic generalities, and there is no cause for anyone to complain that it should have been thus, especially when we recall Sir Michael Foster's remarkable address, in which he pointed out the most important requirements of the different kinds of preliminary education preparatory to the study of the various professions, that of dentistry in particular. He said that education should be fashioned after the manner of a cone, starting from a broad base and narrowing to an apex, for it is the conical bullet that has penetrating power. For each profession the cone should be different, should be fashioned in different ways, though in each case it should start from the same broad base. He indicated what this cone should comprise, analyzing the essential requirements for the dentist.

This admirable address was followed by one from an eminent surgeon of the same university, in which he defined, with as much authority as the previous speaker, the differences which should exist between the trainings of the physician, the surgeon, and the dentist, and in concluding affirmed the necessity for the dentist to be specially trained from the beginning to the end of his course of professional studies, as had been previously asserted by Dr. Kirk, the dean of the faculty of dentistry of the University of Pennsylvania, and Dr. Brophy, the president of the International Commission of Education. Dr. Kirk insisted upon the importance of undertaking the manual education early in life, for a period quickly arrives in later years when such training becomes impossible. It was this fact which was already recognized by Sir John Tomes, the Nestor of dental education in England, as Dr. Kirk has called him.

Some members, Dr. Arkövy, of Budapest, among them, maintain altogether opposite ideas, namely, that dentistry is a medical specialty similar to all other specialties of the healing art, and must therefore be taught under the same conditions as those specialties are. They claim that the preliminary education of the dentist should be of a purely medical character, that the candidate should be a holder of the medical degree, and that only then should he take a special course in dentistry. Others advance opinions favoring

a mixed education taken from both the medical and the dental curricula.

These theoretical discussions have given rise to three questions which the members of the Commission have been asked to treat. Some national federations have also been requested to discuss these topics, and it remains with the Commission of Education to draw from these discussions clear and precise statements that shall serve as a basis for our discussions, and if possible to bring about a general understanding among our delegates. But the object of the Federation is not limited to the study of the best system of dental education; public dental hygiene is just as important a reason for its existence, and it is this topic that presents the greater degree of interest to the public and to the various governments. The Commission appointed last year has prepared reports in which they devote especial attention to the present status of public dental hygiene in the various countries here represented. These reports have awakened an interest on this important subject, and new members have asked to contribute toward solving this problem of unquestionable value and importance. The Commission will have to outline its plan of work for the future by determining the questions to be examined and discussed in the following meetings by the aid of suitable reports, as has been done already in the case of the Commission of Education.

There is another question on which a report has been prepared. It refers to the federation of dental schools. A proposition embodying this idea was presented at the Third International Dental Congress, where it was seriously considered. As a matter of fact, it exists already as a national body in the United States, and comprises more than two-thirds of the American schools. It has helped considerably toward the unification of the dental curriculum and is a factor in the progress of dental education in that country. In France a similar federation is being organized. We all realize what a mighty influence such an international body would have over the great problem of dental education, if, while respecting the autonomy of national federations, it were possible for it to bring about the acceptance by all dental schools the world over of a uniform program comprising a minimum number of studies embracing all the topics a dentist should be familiar with in order to deserve such qualification and in order to be able to practice his profession to the benefit of humankind. It is to be hoped that the discussions which will undoubtedly follow the voluminous report at hand will bring about the realization of this plan.

The work of the Federation during the past year calls for the appointment of new committees. We must also set right the basis of the Federation, which is formed by the different national federations, which unfortunately have not been organized as yet in a regular way.

Lastly, we must see to it that the different governments take an interest in the work of the Federation, appointing delegates to our annual sessions, so that they may learn from official sources the resolutions which we may adopt and which could be taken into consideration for the enactment of new legislative measures.



Working thus, we shall be advancing toward the Fourth International Dental Congress, the preparation of which has been entrusted to us, and in which the dental world will be enabled to make a new inventory of the recent progress achieved by odontological science.

If we are able during this quinquennial period to insure that the work of the Federation will be carried on regularly, if we can carry it to altitudes where ideas shall meet in peaceful controversies, to unite later on and collapse as the clouds do, after a terrific storm producing copious and fruitful rains, resulting in abundant crops, then we may be able to retire with quiet consciences, leaving the future to others, feeling that we have not wasted our time and that our efforts have been fraught with beneficial results.

Dr. FLORESTAN AGUILAR, the treasurer of the Federation, then presented his report.

Addresses followed by Dr. Hesse, Germany; Dr. Harlan, United States; Dr. Harding, England; Dr. Franck, Austria and Hungary; Dr. Heidé, France; Dr. Guerini, Italy; Dr. Guldeberg, Norway; Dr. Frick, Switzerland; Dr. Morrisson, Australia; Dr. Royce, the American Dental Society of Europe; Dr. Weber, Finland.

---

## NATIONAL DENTAL ASSOCIATION—SOUTHERN BRANCH.

(Continued from page 1048)

Dr. WM. CRENSHAW, of Atlanta, then read a paper on "Non-Cohesive *versus* Cohesive Gold for Cervical Margins."\*

### *Discussion.*

Dr. G. V. I. BROWN, Milwaukee. I would like to occupy the peculiar position in this discussion of taking up both sides of the question. In the first place, I would like to say, with due regard to Dr. Crenshaw, that probably what Dr. Morgan said with regard to his operation was absolutely correct, because I believe one of the most injurious things we have had to deal with in the practice of operative dentistry is the use of the matrix in introducing fillings of any kind. The matrices we had fifteen years ago were such as would not admit of the insertion of a good and perfect filling. I believe the profession owes much to such men as Dr. Crenshaw for their work in bringing dentistry to the place it occupies at this time. If we are to learn, it must be by such investigations as he is now making. With the modern methods of operating and with the preparations of gold we now have, it is possible to insert gold fillings anywhere in the mouth, with or without the matrix, with comparatively little discomfort to the patient. The question of finishing is where the matrix cuts such a figure. The question is, When you come to finish the filling, can you do it without the destruction of the gum tissue and the bony septum around the tooth?

The importance of this is not always considered. If you injure these tissues you have as a result the formation of scar-tissue, without nerves and without bloodvessels, and something that will not produce the original condition. Where we use the matrix to aid us in these operations the question is, Will it aid us in finishing this filling so as not to injure these surrounding tissues? also its help in inserting the material. Everybody knows that non-cohesive gold is better adapted to these surfaces, but, as I look at it, it is a question of whether it will facilitate the polishing of that filling and the preservation of those living tissues in their natural condition.

Dr. J. A. CHAPPLE, Atlanta, Ga. I do not want it to be imagined for a moment that my personal relationship to Dr. Crenshaw has in any way influenced my judgment, but I wish to agree with him in all he claims for his matrix. It is not the result of a day's thought, but he has been working on this for a number of years. I wish particularly to emphasize so much of this paper as relates to the facility with which fillings can be introduced by the aid of his device. In the clinic of yesterday, where he showed a number of fillings made several weeks ago, it was my privilege to see the beginning and finishing of each operation, and I take pleasure in corroborating every claim he has made for his matrix. He has convinced himself that he was wrong, and as a result his hitherto large and extensive practice in cohesive gold work has been reversed.

I feel confident that if you will give this matrix a trial you will be delighted with it. I believe it will bring about a revolution in restorative gold work.

Dr. HINMAN. I would like to hear from Dr. Holland on this subject.

Dr. FRANK HOLLAND, Atlanta, Ga. I must admit that I have some views on this subject. The truth of the matter is, after an experience of about nineteen or twenty years, I am prepared to refute the gentleman's proposition. I can prove it by bringing one of the profession before you this morning. I can demonstrate to you beyond any question that cohesive gold has preserved two teeth perfectly at the cervical margins for twenty years. I saw these teeth a short time ago and they were in perfect condition. It is the work of Dr. Morgan, on Dr. Walker of this city. I believe if I have done any good in my life it is due to the teachings of such men as Dr. Morgan and Dr. Webb. These fillings are perfect, and were made with cohesive gold. They are in as perfect condition as they were the day he made them. Gentlemen, can you argue against such demonstration as that? I do not care to enter into the discussion further, but will say that it is not necessary to mallet with such force at the margin as will fracture the margins. You can adapt cohesive gold as perfectly to the margins of a cavity as non-cohesive,—more so, I believe.

Dr. H. W. MORGAN, Nashville. I want to take exception to the assertion of the gentleman who has just spoken. Under certain conditions non-cohesive gold will do better than cohesive; under

other conditions cohesive will do better than non-cohesive. I want to contend that the gold does not preserve the tooth-structure at all. It is the change we bring about in the condition of the tissues that preserves them. The filling material is adjusted at that point so that we do not have a reproduction of the process that originally located the decay there. The gold does not preserve it; it simply stops the process by the skillful adaptation of the gold so that the walls will be kept clean, thereby overthrowing the conditions that originally brought about the caries. The original occurrence of caries is the result of abnormal physical conditions, and when we have produced conditions that will prevent the recurrence of decay, we preserve the teeth. I have in mind now two teeth that were filled with gutta-percha twenty years ago, and to-day they are in perfect state of preservation. Was it the gutta-percha, or was it the mechanical skill exerted in placing these tissues in such conditions as would prevent the recurrence of decay? I have a filling in my mouth that Dr. Webb put in twenty-six years ago, and I challenge any man to find the least sign of recurrence of decay in the neighborhood.

I want to compliment Dr. Crenshaw on the instrument he has so generously offered the profession as a substitute for the old matrices. I want one as soon as they get on the market. I also want to compliment the doctor for having the moral courage to come before this association, after twenty years of advocating the use of other methods, and acknowledging that his own experience has reversed his opinion with regard to the preservation of approximal cavities. If this instrument will do what he claims for it,—if it will enable us to place gold in these approximal cavities in such a way as to bring about conditions that will prevent the recurrence of caries,—I say it is the thing we want. It will have to stand the test of time, though, and prove its worthiness to be adopted by the profession. Will it enable us to condense gold so that it will stand the force of occlusion and preserve normal conditions under any and all circumstances? The test of time will prove its value.

Dr. C. L. ALEXANDER, Charlotte, N. C. I do not care to discuss the relative value of the different forms of gold, soft and cohesive. I feel that I would have to abandon dentistry if I had to confine myself to just one form. I have never used a matrix. I have never seen a place where I could use it to advantage, but since seeing this matrix of Dr. Crenshaw's and seeing such results from its use. I propose to give it a trial. I think we owe Dr. Crenshaw much credit for this valuable instrument, which in my judgment is the best that has ever been offered to the profession.

Dr. G. V. I. BROWN, Milwaukee. Once in a while a man is born who can use cohesive gold better than non-cohesive, and I believe Dr. Holland is one of these men. As for myself, I cannot do it. The question is, Which is better in the majority of cases? When there is any doubt in your mind, place non-cohesive every time. Such men as Dr. Holland and Dr. Webb have demonstrated the fact that cohesive gold can be adapted in all cases if the highest degree of operative dentistry is reached. But how many such operators have we at the present time?



I would like to say one word with regard to the shock sometimes produced in the tissues as the result of malleting gold into a cavity. The question of shock is one that we do not take into consideration as we should. The surgeon looks upon a shock as something which precedes collapse. We very often, I believe, in the insertion of large gold fillings produce serious after-effects from the shock to the nerve filaments, and I believe that dentists are very often responsible for after-effects for which they are not credited. I have inserted large cohesive gold fillings that I would not attempt to insert now with cohesive gold, as long as I could get a substitute that would enable me to avoid the danger of shock to the tissues. I think we should welcome the matrix or anything that will enable us to better preserve the tissues and lessen the liability to shock.

Dr. WM. CRENSHAW, Atlanta. With regard to gold preserving the tooth-structure, Dr. Morgan expressed my idea exactly when he said it was not a question of gold that we were discussing, but the question of adaptation. We can get better adaptation with soft gold when it is held firmly in position by the use of the matrix than we can with cohesive gold with or without the matrix. Some fifteen or eighteen years ago, after the death of Dr. Webb, I spent three months with Dr. Parmly Brown, who was then the foremost advocate of cohesive gold and the electric mallet. I made these different preparations of gold and the manner of adapting them a study. I observed Dr. Brown closely to see how he manipulated cohesive gold with the electric mallet. I came home perfectly enthused over the results, and I thought we had everything in a sling before us. I prepared myself for this work, and filled every tooth with cohesive gold that came, opening the teeth with a separator, shaping the margins with care, and malleting the gold in with the electric mallet. Eight or ten years ago I found in many cases the margins at the gingival borders were failing. I was greatly disappointed. On the other hand I saw fillings of soft gold that had been standing twenty, thirty, and forty years, with the margins perfect, and no sign of recurrent decay. There is no man who has observed many of these fillings but will tell you that soft gold when properly manipulated, will preserve the tooth better than cohesive. I believe most of the failures are made in the laying of the foundations of the fillings; therefore I have changed my views with regard to cohesive gold, on account of having convinced myself, by my own operations, of its failure, and on account of seeing more successes made with soft gold than with cohesive. Dr. Holland cites Dr. Webb's operations performed in the mouth of Dr. Brown, of this city, as proof of the fact that cohesive gold can be relied upon. In answer to that I will say that those operations he speaks of are failures. I examined them and found recurrent decay where gold was placed by the best operator the profession has known. I have a filling in my mouth, made by Dr. Parmly Brown with cohesive gold, that is failing. And I believe it to be universally true that all such fillings made with cohesive gold will fail. Probably not in three, five, or ten years, but they will fail. Dr. Morgan speaks of the margins of the fillings in his mouth. If these margins

are beneath the gum there is likely recurrent decay there to-day. I believe the obstacles are overcome by the use of the matrix I offer. It represents my idea in working out the proposition.

Dr. HOLLAND. With reference to Dr. Webb's work, I did state that I had seen it recently, but since thinking about it, it was several months ago. I will ask the gentleman, though, if he has seen a soft gold filling that has lasted that long.

Dr. CRENSHAW. I have seen soft gold fillings that have lasted forty years. If a cohesive or non-cohesive gold filling fails in twenty years, it is a failure. Many of the cohesive gold fillings referred to as decaying are not extensively decayed at the cervical margins, but there are pits around them of recurrent decay. I have not spoken on any risk whatever; the pits are there, the recurrent decay is there, and you can see for yourselves. It is a matter of proof that you cannot rely upon cohesive gold at cervical margins. I think we should seek to find something better. I think with the matrix a safer and better class of work can be done at these margins with soft than with cohesive gold.

On motion the subject was passed.

#### ELECTION OF OFFICERS.

The association then proceeded to the election of officers for the next convention. The following were elected: L. G. Noel, Nashville, Tenn., president; Geo. S. Vann, Gadsden, Ala., first vice-president; W. G. Mason, Tampa, Fla., second vice-president; John R. Beach, Clarksville, Tenn., third vice-president; B. D. Brabson, Knoxville, Tenn., treasurer; C. L. Alexander, Charlotte, N. C., corresponding secretary; S. W. Foster, Atlanta, Ga., recording secretary. Dr. J. A. Chapple, Atlanta, Ga., was elected annual essayist. Drs. J. E. Chace, Ocala, Fla., and J. P. Gray, Nashville, Tenn., were elected members of the Executive Committee for three years, and Dr. W. H. Weaver, Lagrange, Ga., for two years.

No further business being on hand, the Southern Branch of the National Dental Association adjourned to meet again at a time and place to be decided later.

---

### DENTAL SOCIETY OF THE STATE OF NEW YORK.

(Continued from page 842.)

THE reading of the paper by Dr. A. E. WEBSTER, Toronto (published in full in the DENTAL COSMOS for September, page 925), entitled "The Comparative Value of Ordinary Sealings for Root-canal Dressing as Excluders of Bacteria," gave rise to the following

#### *Discussion.*

Dr. HEAD. I notice that in each series it seems the oxychlorid tubes were broken. Why were those tubes broken?

Dr. WEBSTER. When they came out of the saliva, the whole top of the tube was shattered and broken to pieces, so that they leaked.

Dr. HEAD. Was it from the heating?

Dr. WEBSTER. I think from the swelling of the oxychlorid. That is only my surmise.

Dr. FREEMAN. What temperature were these taken in?

Dr. WEBSTER. The regular bodily temperature, 98.4° F.

Dr. RHEIN. I feel we are to be congratulated upon having so scientific a paper presented before us at this session, especially as Professor Webster has gone into the subject with so much clearness and detail, and evidently with the intention of following it to its legitimate conclusion. Very likely the conclusions arrived at are a surprise to most of us. It is very essential that any work of this kind should be substantiated and corroborated by work done by other men under similar circumstances. It is important for us to know exactly the materials which the doctor has used. There are a number of us who would question the permeability of some of the filling materials used for stopping purposes, and it is impossible from the paper to be certain as to the materials that have been used. The possibility of osmotic action in a large number of filling materials is well known, and I think there is but little question that the large majority of stoppings do leak. It seems from a cursory glance over the results given to us in this paper, that the germicidal qualities of the oxychlorid of zinc were powerful enough to prevent bacteria from entering where that was used. Many of us have used stoppings in pulpless teeth for many years, and have felt positive that the patients have had neither trouble nor painful effects from the intrusion of bacterial influence, and when the stopping was removed, so far as the naked eye was concerned, the canal and pulp-chamber were as clean as when the stopping was introduced. There is no doubt that chemical laboratory research and clinical experience are often at loggerheads when it comes to the practical demonstration of operative work. We have found this out in the past, and it does seem, as far as the doctor's experiments have gone, as though there is some such controversy in the present matter. Personally, the work of the essayist is extremely pleasing to me, and nothing would be more gratifying than to have Professor Webster bring us next year the continuation of the line of work which he has so ably presented to us to-day. I believe the publication of this article will result in similar tests being made by other men, so that we would be in a position next year to either corroborate the work as presented to us, or disprove it. It is impossible to enter into a detailed discussion of this interesting question until we have gone more thoroughly into the subject.

Dr. HEAD. This paper is one of the most interesting to which I ever had the pleasure of listening. It is perhaps a personal question with me, because at one time in my dental experience I carried out some such experiments myself, and while they were not done with the nicety and precision that Dr. Webster's have been, they to a great extent, if not entirely, corroborated what he asserts.

When we say that clinical experience is at variance with laboratory work, we must be extremely cautious as to what we mean



by those terms. Because Dr. Webster has proved that gutta-percha leaks, does that of necessity lead to the conclusion that gutta-percha is not a good tooth-filling? We must remember that bacteria in themselves may not be dangerous. It is the conditions under which they are present, and the amount of food they have to work upon. We all recognize that with gutta-percha in itself, when bacteria penetrate between the gutta-percha and the walls of the tooth, it is like an army sent into the desert without its commissary. I am actually convinced of the accuracy of this work from my own previous work. I have made cones of oxyphosphate of zinc, and sterilized them; they were hollow in the center; I dipped them in bouillon swarming with bacteria, and in ten minutes I opened them and found that bacteria had penetrated within. At the end of a day, again and again, I have opened them and found bacteria present within the cavities.

In answer to a question that was asked, Why are the cones made hollow? I would say: They were made on cones of paper. First there was made a cone of paper, then the outside of that cone was covered with the oxyphosphate of zinc; while this was still plastic a bit of oxyphosphate of zinc was prepared and the cone set upon it, thus having the inside of the cone oxyphosphate of zinc and paper, but the bottom oxyphosphate only. When this was made perfectly sterile, as I said, and examined as well as could be to see that no apertures were there, they were placed in a bath of bouillon with the result I mentioned.

Concerning the gutta-percha, I think any one of us can make a rough test of the doctor's experiments by taking an ordinary cavity, packing it carefully with the ordinary gutta-percha base plate, and dropping it in red aniline ink. You will find that in five minutes the ink will have penetrated. This only goes to prove that a leaky filling does not necessarily mean a bad filling. It is always a question as to whether the bacteria leak in such a way as to carry on their growth and operations of destruction against the tooth-structure.

One further point I would like to make, that is not at all in the form of a criticism; it is, however, a slight suggestion. Some fifteen years ago I was an ardent advocate of the use of cosmolin and cotton for a root-dressing, and I did find it very valuable for keeping the bacteria out; but I found the cosmolin had an unpleasant way of turning the tooth-structure a greasy green. While this has nothing to do with the doctor's experiments, I only would advise the members that, in their zeal for finding canal-stoppings, they should avoid that material.

Dr. HOFHEINZ. I was much pleased to see this paper discussed in such a manner. The statement that gutta-percha, in spite of the fact that it is leaky, is not valueless is undoubtedly correct. The main question, in my estimation, is this: Do we get bacterial infection through the dentinal tubuli after we have thoroughly sterilized our pulp-canal and are supposed to have thoroughly sterilized our dentinal tubuli? If, later on, infection takes place and shows itself as a peridental inflammation, do we get it through the dentinal

tubuli, or owing to the fact that some bacteria have remained dormant in the apical space? As long as it cannot be proved that we are getting our infection through the tubuli, it is of little consequence whether the root-filling is strongly antiseptic or is neutral. If antiseptic, it may not prevent the bacteria which are in the apical space, and which may have remained dormant for a time, from developing later, owing to some other disturbance, and manifesting themselves in peridental inflammation. That is a vital question, upon which the relative value of the antiseptic quality of any root-filling material depends.

Dr. OTTOLENGUI. As Professor Webster has informed us that this is a preliminary report, I would like to touch on a matter with the possibility that it may suggest a little different line of experimentation. I heard Dr. Head's theory as to why these tubes which seemed to be bringing out the best results were so often reported broken, and I venture the suggestion that it might be the expansion of the oxychlorid. That is a point which requires to be investigated, for this reason: Whilst it may be true that these materials themselves permit the ingress of bacteria through their substance, we can readily believe that bacteria which could pass through the substance of the material would more readily pass between the material itself and the cavity; that is to say, the source of ingress may more naturally be along the alleged contact between the material and the wall. If it be true that the oxychlorid expands, even to the extent of going beyond the resisting power of the glass, then it would seem possible, granting this body itself to be impermeable, that it has stopped the ingress, because it has made a better joint. This would not be so apt to succeed in the mouth, because only in a very few instances is the filling material surrounded by confining walls. With materials which shrink or expand in the course of chemical change of this character, the expansion or contraction can be controlled to some extent by resisting walls. For example, if a body of this material would expand unrestrained in all directions, it would expand with equal force in all directions, but if confined on three sides only, as for instance in an approximal cavity, I do not believe the expansion would cause a tightness of the joint, but would go toward the unrestrained side. Without restraint it expands in such a way, where with restraint it does not. Experiments similar to those reported by Dr. Head should be carried on to see what the permeability of these materials is, and whether the test fluids pass through the joint. If through the joint, we are no better off than we were before.

Dr. AMES, Chicago. I am very much pleased that Dr. Webster has gone so far as he has in this subject, and am glad to hear him say he is going farther, because, as the last speaker has said, I think some methods might be brought into his work which would make the results more conclusive along this same line. If Dr. Webster had stained this saliva perceptibly, with something not a germicide, so that after breaking the tube he could also have opened the mass of stopping to find whether or not there had been a permeation by the stain, he would have known whether the leakage occurred be-

cause of an imperfect adaptation of the stopping to the wall of the tube, or through the mass itself. From some of the materials used, I have no doubt there was a permeation of the mass itself. With some other materials, I would like to know and to have Dr. Webster ascertain whether it was really a leakage of the mass itself, or a passage along the wall. I know that with amalgam experiments of shrinkage and expansion, glass is an unsatisfactory material for the tube, because there is so apt to be an expansion or contraction of the tube itself, which throws you off from the result,—so much so that steel tubes have been adopted for cement and amalgam experiments. I have not the least doubt that the breakage of the tubes came from an expansion. I also believe the oxychlorid is apt to be the most impervious cement we have, much more so of itself than most of the oxyphosphates; yet, with all this, is it essential that we have an absolutely impervious material for sealing medicaments, since we have germicides which will remain potent for a very much longer time than we care to have them sealed within a tooth? If we have a germicide of which we can use a certain quantity, and have it remain potent for many more days than we actually wish, does it matter greatly whether we use a material slightly faulty for the sealing?

But the result of Dr. Webster's experiments, if he can arrive at some definite conclusion, it seems to me, would give us a clue as to the very best root-filling material.

Dr. LEROY. Is it not possible that upon the cooling of the gutta-percha there would naturally be contraction,—a space? Also with the other filling materials. Contraction might be true of the phosphates under given conditions, the result being that upon their hardening there would be a shrinkage.

As to the filling with cotton and sandarac, there occurs evaporation of one of the ingredients,—the alcohol,—which leaves a porous filling material very readily permeable by saliva or a stain. If the doctor experimented with gutta-percha dissolved in the essential oils, or in chloroform, then eucalyptus oil, oil of cajuput, or the other essential oils added, I am of opinion they would rather hinder the passage of germs along the side of the canal, whether dental or experimental instrument.

Dr. WEBSTER. I am very much pleased with the kindly manner in which my paper has been discussed, and I am also pleased with the criticisms and suggestions, because they will tend to bring out the truth.

It is objected that these experiments are not made under similar conditions to those existing in the mouth. Quite true, the fillings were not put into teeth in the mouth, but the essential conditions are very similar. The intention was to put in these fillings in about the manner in which ordinary dressings are sealed in practice. It was not the aim to put in permanent fillings or to make root-fillings, although a good number of those were done, and will be reported at some future time. The temperature of the materials, the fillings, the cavities, and the saliva were as much like those met with in general practice as it is possible to have them, out of the mouth.



The discussion seemed to be largely as to whether bacteria would pass through gutta-percha or not. The fact is, these experiments throw no light upon that point; they may or may not do so. Nor do they show that bacteria pass through between the glass tube and the gutta-percha. Either one or both surely happens, however. It is said, if the gutta-percha is put into the tube hot, that on contracting a space will be left around it where leakage may occur; but the glass tube will also contract, as it certainly becomes of the same temperature as the gutta-percha, which is not the case with a tooth in the mouth. I am quite willing to admit that it is a very difficult thing to put a good gutta-percha filling in glass tube, nor do I think it is any easier in a tooth. It must be kneaded until it is of the same temperature as the body.

After making hundreds of experimental gutta-percha root-canal fillings I conclude that the orthodox method of chloro-percha and gutta-percha cones, well pressed home, is much better than pure gutta-percha. My recent experiments in bacteriological tests only corroborate work previously done with red-ink tests. I used to think that a root-canal filling made of pure gutta-percha was better than one containing any material which might evaporate, but I do not now think so. The chloro-percha is an advantage.

I am glad that Dr. Head has called attention to the bad effects of using vaselin in pulpless teeth. I have never used it to any extent except in the laboratory.

Dr. R. H. HOFHEINZ read the next paper, his subject being "Extension for Prevention." (This paper is printed in full in the DENTAL COSMOS, September issue, page 914.)

#### *Discussion.*

Dr. JARVIE. I have listened to this paper with much pleasure, as I know all of you have; and yet that pleasure is somewhat diminished by the thought that it so nearly echoes my own feelings on the subject, that there is hardly anything for me to say, except "Amen." The paper might be discussed from several points of view and perhaps each be correct, but the points of view might so differ that what was said would lead a listener to believe that those joining in the discussion held diverse views. I cannot think that intelligent men like Black, Wedelstaedt, and Johnson are as radical in practice as one might infer from their writings. The teeth of a delicate child of twelve or fourteen years of age certainly ought not to receive the same treatment as the teeth of a person of fifty years, whose teeth are of dense structure and whose muscles are firm. The child ought not to be subjected to the great strain upon both nerves and physique necessary to perform an operation that to an older person would be no strain at all; and so it is unwise to lay down laws and say they shall be followed in all cases or even in a majority of cases. Undoubtedly perfectly finished fillings under the free margin of the gum are almost immune from the influence of bacteria; but it is not wise, nor is it possible to subject some patients to the strain necessary to make perfect fillings or obtain perfect margins there.

We must insert fillings upon the approximal surfaces particularly, with judgment,—very much as the artist who obtained beautiful effects on his canvas, said when asked with what he mixed his colors to get such effects: "With brains." We must fill these cavities with judgment, as well as with filling materials.

Beyond this, I have little to say, except perhaps that the paper read by Dr. J. Leon Williams at the New York Odontological Society some five years ago, in which he demonstrated that often the decomposition of the calcium salts had progressed much farther than the eye would indicate, leads me sometimes to excavate as far as where I think the decay extends, and then to cut a little beyond. In many cases where there is a small cavity on the mesial or distal surface I think it much wiser to insert a small filling which I know will preserve the tooth for some time than to cut away tooth-substance beyond the free margin of the gum and perhaps leave the tooth no more immune from decay than with the small filling.

An expression open to objection, but one that is frequently used in connection with this subject, is "a self-cleansing surface." A "readily cleansed surface" I think would be better. Of course, there are surfaces of the teeth, like the cusps, and perhaps the buccal and palatal surfaces of many teeth in most mouths, which are self-cleansing,—that is, the action of the lips and tongue or of mastication will keep these surfaces perfectly free from all deposits, although in some mouths it is necessary to use the brush and stick very vigorously, and even then hardly get a thorough cleansing. As I said before, and it comes back to this, we must take into consideration the age, temperament, endurance, and nervous condition of the patient in determining how best to treat decay upon the approximal surfaces.

Dr. SANGER. Listening to this paper, I feel very much as Dr. Jarvie does, that I cannot antagonize Dr. Hofheinz's opinions because they are in accord with my own, and to "throw bouquets" at an essayist whom you have already crowned with a wreath of laurel for his clear thinking and intelligent presentation of any subject would be a waste of time.

The summing-up of his paper would seem to say that if we are to make teeth immune from decay we should incase them in gold entirely, and then theoretically at least they would be immune; I did not say practically. Of course we cannot do that, and so the subject resolves itself into a question of your ability to use what is commonly called "horse sense." I do not think clinical experience has ever carried out the theory laid down by Dr. Wedelstaedt, and I think Dr. Black, if he were here and heard the doctor quoted, would devoutly say "Save me from my friends!"—for I think with Dr. Hofheinz that our opinion of Dr. Black's proposition of extension for prevention has largely been molded by that most excellent gentleman, Dr. Wedelstaedt. In the discussion in Brooklyn on this subject, Dr. Wedelstaedt, if he did nothing else, succeeded in rousing the combative spirit of every man present, and the only thing that redounded to his peace of mind was the fact that he was in Chicago, while we were in Brooklyn.

I think I can say with Dr. Hofheinz and Dr. Jarvie that you need not be troubled about the problem of extension for prevention so long as you use good common sense, guide your hand by good, intelligent dental skill, and your brain by good, clean, dental education.

Dr. OTTOLENGUI. Dr. Wedelstaedt did not spare me very much in Brooklyn, but he was very gentle when I went out to Chicago, and I think it is only fair for me to say a word in his behalf. It has been argued here, and it is an argument I have used myself, that it is questionable whether all cavities should be made much larger, and the patient made to sustain the extra strain of filling the enlarged cavity. Dr. Wedelstaedt said that those in the East who made such claims fail to comprehend his methods; that the cavity preparation is such that whilst the cavity is made larger, it is so much more accessible that the enlarged cavity can be filled in the same time it would take one of the Eastern men to fill a small one. I am prepared to admit that there is some truth in this. Also I would call attention to the fact that our Western friends point out that in fillings having a curved cervical border, when recurrence of decay does present, it will most usually be found at the linguo-gingival angle, and likewise at the labio-gingival angle. It is not a very great extension to cut these points with a bur, making the cervical border squarer, while the extension at the labio-gingival corner of the cavity gives a greater access to the cavity, simplifies the placing of the gold, and does not enlarge the cavity sufficiently to bring it into sight. In this way space can be gained for operative procedure without greatly increasing the area of the filling which can be seen. This is peculiarly true in the bicuspid, — those difficult approximal cavities. Frankly, I will say that since my visit to Chicago I have practiced this to a greater extent than before, and I am satisfied that it is a good procedure. I was converted to that extent by my trip to Chicago. I do not mean that all cavities should be so enlarged. Sometimes we have an abundance of space; we may be dealing with a clean mouth where there is not much tendency to decay, and we may follow our own methods; but in weaker teeth, and in patients of frail physique and of poor resistance, you will find that this is a very safe method, and although placing a larger filling, you will be able to operate quite as quickly, if not more so. I say that much partly in defence of Dr. Wedelstaedt and the gentlemen in the West, and partly in defence of myself. I do not wish it to be understood that I am so wedded to my own gods that I am an idolater who cannot worship at other shrines.

Dr. HEAD. The extension for self-cleansing surfaces I think comes down to this point: the cavity should be prepared with firm, strong, sterile walls; the filling should be so inserted as to as much as possible exclude bacteria; it should be made as good a filling as can possibly be made, and the patient should be so instructed to use floss silk and tooth-brush and mouth-washes, as to keep it clean, and no matter whether it is a small filling or a large one, or what shape, it will stay clear from decay if it is well done



and kept clean. This extension for prevention in itself is just as philosophical as it would be if the English Parliament should say that every Scotchman subject to itch should have his fingers sliced in between and sewed together again, so that itch might not by any possibility come in between those fingers.

Dr. RHEIN. I think we all appreciate that the paper presented by Dr. Hofheinz about covers the ground, inasmuch as the essayist recognizes the true value of proper extension, and fully realizes when it should not be attempted. I have been somewhat amused by the trend of the discussion, because it seemed to me as though the speakers, while agreeing with the essayist, seemed to be getting rather far away from his views. The unfortunate part of this whole subject is what Dr. Jarvie so aptly brought out, that if we were all possessed of the wisdom of Dr. Black, and knew when to use the proper discrimination, we would know when to practice extension, and when it would be unnecessary. The value of extension—and I mean by that radical extension, as expressed by Dr. Hofheinz—in the posterior teeth has been well understood in the profession for the past twenty-five years at least. As Dr. Hofheinz said to-day, it was taught most thoroughly by Dr. Webb, as far back as 1875, but the essayist is in opposition to the Western idea of the extension of this doctrine to the anterior teeth.

Now in this matter of the doctrine of extension in the anterior teeth is where Dr. Hofheinz's criticism of the Wedelstaedt arraignment of the East is unquestionably well merited. I believe it is a hundred times better to fill an anterior tooth and preserve its esthetic qualities, even by refilling it many times, rather than to disfigure it; but when we come to the posterior teeth, there comes the question of the individual judgment, and if it is advisable to practice extension we should not be chary of the amount of that extension. I cannot agree with the view of Dr. Ottolengui, where he seems half converted and willing to make extension at the cervical border, and then preserves more of the enamel margin as he proceeds to the occlusal edge. In other words, he is outlining a cavity, as he expressed it to us, that to start with I cannot agree with him that it is easier to fill. The straighter the lines of the walls of a cavity are in the posterior part of the mouth, the easier it is going to be to insert as nearly perfect a filling as can be inserted. In other words, it should be possible to insert the gold in a direct manner from the cutting surface of the tooth, and not laterally by means of the approximal surfaces.

One point that has been brought out, and it is very important, is the allusion of Dr. Jarvie to the work of Dr. Williams in showing the extension of the line of caries beyond the portion that we see with the naked eye,—a very strong point in favor of extension in a large percentage of cases. That, together with the essayist's remarks on the imperfections of enamel, leads me to say the following: In the preparation of cavities where the necessity for extension is felt, I believe that one of the most important adjuvants that the dentist should rely on, is as powerful a magnifying-glass as

he can find at his disposal. When he finds he has his margins prepared to suit himself, he should then corroborate that by means of as powerful a glass as he can manipulate in the direction of that cavity, and he will often feel like going right back to those margins and giving them a better preparation. That is one of the practical points I would like to deduce from the trend of the argument. This is one of the most important points of the subject,—the exposed ends of the peripheral rods of enamel, as illustrated by Dr. Hofheinz. The part which they play in recurrence of decay is the whole secret of prevention, which must depend on the manner in which they are handled by us in the preparation of a cavity.

Dr. Ottolengui in his remarks spoke about the old-fashioned manner of the curve at the cervical border. I firmly believe that there should be no straight angle left at any point if we want to protect those peripheral prisms in a proper manner. In other words, as long as you leave a direct angle at any point, you are going to take away part of the protection that you give these prisms when you make a rounded margin and do not leave exposed the top of any single rod. What little success I have had in filling teeth, and by that I mean where there has been no recurrence, is due to a very large extent to using every means to get the enamel rods in such shape that no single rod stands unprotected, and using every ingenuity to avoid a direct angle at any point. I am aware this is contrary to the Western teaching of extension, but it is in accordance with the way in which the work was done by Dr. Webb, and I know of no better work of that kind, as far as preserving teeth by filling is concerned.

Dr. OTTOLENGUI. Sometimes we are very easily misunderstood, and it is not unlikely that I did not well express myself. My point is this: The diagram that I have made on the blackboard (Fig. 1)

FIG. 1.



shows a cavity in a bicuspid; let us suppose all decay has been removed. It has been my habit to leave the cervical border as it is here shown by the solid line. The doctrine of Dr. Johnson and his disciples is to shape it as shown by the dotted line. I agree with Dr. Rhein about the angles; they should be rounding not sharp. It has seemed to me during the last year that something has been gained by using a rose bur, and extending such a cavity in that manner, not making the corner an acute angle, and not extending so much bucco-lingually.

It is not a question, as Dr. Rhein seemed to understand me, of filling the cavity through this extension, but the enormous increase

of opportunity to see into the cavity. I find that the extension labio-gingivally gives me a better chance to see into my cavity, and that is why I have followed this to that limited extent.

Dr. HOFHEINZ. Coming back to this question of curves and angles: One other reason in addition to those Dr. Ottolengui mentioned, is the fact that when we are enlarging the cavity bucco- and linguo-gingivally, we also increase it bucco-linguo-occlusally, which makes it larger and more accessible.

Another reason why tooth-decay does less readily take place at the gingivo-lingual angle and the gingivo-buccal angle after extension is that you are less apt to injure this wall, because you are condensing your gold practically at right angles with the margin, and there is no margin more safe from recurrence of decay, or gold more perfectly condensed, than a margin where the gold has thus been condensed. I do not think it is altogether owing to the fact that it is more self-cleansing, but to the technical fact that you are getting a more accessible cavity. Where you do not extend to the self-cleansing surface, that mechanical reason, I think, must also hold good to a great extent regarding the cervical wall. In that respect I do not quite agree with Dr. Rhein.

Dr. RHEIN. I see no necessity for making the extreme angle.

Dr. HOFHEINZ. I would not make an extreme angle for any operation.

I have nothing else to say, except to thank you that you have all agreed with me, although I should have preferred that you should not. I am sorry I did not read this paper, with the additions that I intended to make, before our Western friends,—practically going into the lion's den.

Dr. SIDNEY S. STOWELL, Pittsfield, Mass., read a paper entitled "The Practical Side of It," which for lack of space we are compelled to omit.

Dr. W. V-B. AMES, Chicago, then read a paper on the subject of "Cements." (This paper was printed in full in the October issue of the DENTAL COSMOS, at page 1023.)

Dr. JOS. HEAD read a paper entitled "The Hygiene of Bridge-work, as Exemplified by a Piece of Removable Porcelain Bridge." (Paper printed in full in the October issue of the DENTAL COSMOS, at page 1005.)

#### *Discussion.*

Dr. TRACY. As we make our rounds, we are sometimes told that we are working in an era of porcelain; and then again others tell us that it is an era of oral hygiene and prophylaxis. And both statements may be right; for, on reflection, I know of no law to prevent us from working in two eras at the same time. Dr. Head approximates the ideal of the porcelain enthusiast and also the ideal of the enthusiast on oral hygiene and prophylaxis. As I read his paper yesterday, in a very hurried manner and under unfavorable circumstances, I thought he was going a long road for a rather doubtful result, in making the piece



described ; but as I heard him read the paper this morning, and saw the finished piece, I came to the conclusion that I was mistaken, and I am sure no one will doubt the benefits that will accrue from the wearing of such an appliance. It is generally conceded that among the materials at our disposal for use in prosthetic work, none has more advantages than porcelain for cleanliness. It does not have the tendency to accumulate débris that the metals do, even when they are well taken care of, and there are no crevices or little places in which the food can lodge. The little piece represented in the lowest drawing on the board is also very valuable, and while Dr. Head, with his skill in porcelain, finds it probably easier to make that piece in porcelain than the ordinary dentist would with gold, I see no reason why that particular piece is any better than if made with gold, except in so far as the porcelain increases the cleanliness of the fixture. We are to be congratulated upon the advance in bridge-work that has taken place with the introduction of porcelain, for I believe that when it is properly manipulated, a porcelain bridge is more cleanly than any other we can insert.

As Dr. Stowell said, if it is studied by a bridge engineer who makes his piece along practical lines, it is a valuable piece of work. The provision Dr. Head has made for cleaning certain bridges illustrated on the other side of the board is really quite a marked advance. If bridges are put in so as to permit of their being thoroughly cleansed, as he illustrates it, it seems to me to be most practicable. The men who say that the fixed bridge has no place in dentistry, I think make an exaggerated statement, because by following out this method, and making it possible to pass the floss in between all the teeth, even over a long bridge, it can be kept scrupulously clean by a careful patient, the only difficulty being to get the patient to follow directions. I think that this method that he exhibits is going to be very valuable to us, and the society should be congratulated upon having it introduced through this channel.

Dr. FREEMAN. I just came in when the latter portion of the paper was being read and this was passed to me. In putting on this clasp, he had these teeth shaped in this manner,—so the points are entirely wrong, as he could not slip that on. [Illustrating:] That would allow the spring of the case to go into position. I have been wearing a case of this character in my own mouth for six or seven years,—made in gold, however. I have made quite a number of pieces running from one side of the mouth to the other, leaving a little piece in the arch of the jaw, clasping two teeth on one side the canine, posteriorly carrying a saddle, running just a little piece here, made of platinum.

Here is the palatal portion of the arch. Lay this over the platinum, and in there I use No. 16 to 17 gauge wire,—that is, clasp metal round and soldered over that, to make it very strong, about this width ; running across the arch, carrying a saddle on one side, with a clasp on the canine on the other side, probably having a molar and bicuspid.

Dr. HEAD. Do you make a rubber attachment on gold?

Dr. FREEMAN. A gold attachment, and the gum made of rubber.

Dr. HEAD. Is that removable?

Dr. FREEMAN. Yes; it is very much on the same principle as that introduced by Dr. Bonwill.

Dr. HEAD. It was not Bonwill, but J. D. White, in 1856; and I think he got it from someone else, in 1838!

Dr. FREEMAN. As I am not quite as young as Dr. Head, I cannot recall this paper of 1838; nor have I gone into the history of it, but I went over it when Dr. Bonwill brought out this matter of clasps and spuds. You must study the exact point of placing the attachment of the clasps. You can place a tooth in at any angle. If you have anything of this shape [illustrating], you place your attachment for the clasps at any point, and you can bring your teeth in.

Dr. HATCH. I want to add one suggestion to this excellent paper of Dr. Head's, and that is concerning this construction where the gold spud lies in the sulcus. The sulcus is the point most apt to be attacked by caries, as we all know, and even providing the tooth be a sound one, if the sulcus is covered by the spud, and the piece cemented on and consequently not removable, decay is invited. As a matter of prophylaxis, therefore, I have filled that sulcus with gold, extending out beyond the line of the spud, so there was a free space on each side, letting the spud rest or slide on a gold foundation, taking pains to let the gold filling extend down a little beyond the occlusal portion.

I am not well up in the history extending back to 1838, but I do know that, before Dr. Bonwill's paper was brought out, I was taught to do such work by Dr. J. Edward Line, of Rochester, and I supposed everyone was familiar with it at that time.

Dr. HOFHEINZ. It is always a pleasure to hear from Dr. Head. We listened over an hour yesterday to the prophylaxis of the oral cavity in connection with operative dentistry, but we have rarely listened to prophylaxis in connection with prosthetic dentistry.

I have never been a believer in saddle bridges which were permanently placed. I do not see how they can be kept scrupulously clean under the most advantageous circumstances. I have made a few of these bridges, and I remember the teeth were so very cone-shaped that instead of putting on the clasps I have used a partial crib in addition to the spud which Dr. Head has told us has been used since 1838.

Speaking of all-porcelain bridges, the ease with which Dr. Head does this work reminds me of a little story. An Hungarian once said that the English language was extremely difficult to learn. We had a great many long terms, etc. "For instance," said he, "you say 'in-con-ve-ni-ence' in English." The Englishman said: "What do you say in the Hungarian language?" "Why," he said, "we simply say *Netlikaplomtschek*."

I am very glad that this subject of porcelain bridges has been brought up, because for years, at the instigation of Dr. Butner, I have not soldered my teeth to the backings, because, it makes no difference how carefully you adjust them, if it is self-cleansing at the gum line the filth will be between the porcelain and the backing. As Dr. Head has said, it is for that reason he removes his platinum

between the backing and the ridge. I want to ask Dr. Head whether he agrees with what Dr. Mitchell, of London, told me, when I met him the other day,—that platinum is more benign to the gum tissue than gold. I do not know of anybody in the profession who is better able to speak on prophylaxis in connection with prosthetic dentistry than the gentleman who read this paper.

Dr. GOLDSMITH. I just want to add one or two little points to the very admirable paper, while we are on the subject of hygienic construction of artificial dentures, and that is in reference to what Dr. Hofheinz said about cone-shaped teeth. I have found great advantage in putting a little filling where it is not conspicuous, a little button of gold over which the clasp would spring and keep it from coming off. The button of gold is very much the same as the little clasps that used to be on pocket-books. The clasp lies over it and catches it. It can be put on the palatal surface, and will not be conspicuous. I fill that end up with gold and platinum.

In reference to what Dr. Freeman said about making a dovetail between two teeth; if a clasp were soldered here and there, you could not get it in or out. I do not know whether Bonwill was the originator of it or not, but I got my ideas from the paper he wrote. In making the clasps, the opening should be at the point of greatest overhang. The clasp should be soldered so that the spring is greatest at the point of greatest overhang, and so that it will slip in and out. Another point in reference to the permanent bridge-work: I am not a believer in saddles for permanent bridge-work, although I was at one time. I have seen those cases come back, and the condition of the gums was just as Dr. Head described. I do not think they are healthy. There is something pathological there, or we would not have that stasis.

Where we put a crown on the third molar and on the first molar, where the second molar is missing, I have put in permanent bridges of all gold, a gold crown on the first and third molar and a piece of gold soldered between the two, which is really a bridge, so there is a free space on all sides. A little tooth, going between, leaving an absolute open space that can be cleansed from the buccal and lingual aspects, that does not touch the gum, and the brush can positively clean from both sides.

Porcelain bridge-work is an excellent thing, and I think Dr. Head has done a very good thing in calling attention to the various permanent bridges and the uncleanness of them. Some cases can have permanent bridges, but they are few and far between.

Dr. HEAD. Concerning the Bonwill clasp, I would say that from a purely mechanical point of view, the clasp so constructed as to spring around the bottom of the tooth and be absolutely independent of the spud is all that could be desired; but we must remember that there is in addition a serious objection, as it leaves a great space between the clasp and the spud which is apt to catch food, and after a meal I have seen these clasps made according to the Bonwill principle matted with shreds of meat that ordinarily the tongue could not cleanse, and the clasps would have to be taken from the



mouth and scraped vigorously. I applaud the great ability of Bonwill. No one knew him better than I; I respected him and had a great affection for him; but I think in that regard his mechanical ideas went somewhat ahead of the practical ideas, and while I have tried in fitting my clasps to make them so that there would always be the spring of the clasp in such a way as to give great stability and strength to the structure, I have tried to blend the clasp and the spud so there would not be this space, and so get greater cleanliness.

While we may have to give up a little of the theoretical mechanical side, by a closer union of the clasp and spud, and by a little ingenuity on the part of the dentist, we can get all the practical points that Bonwill desired, and yet have this space filled in such a way that food will not collect there.

Concerning the decay in the sulcus of the bicuspid, I have heard of two or three cases from others, where decay did start there, but I have yet to find in my experience a single case of decay in that respect.

Concerning platinum being easily and hygienically adapted to the gum tissue, it ought to be, because there is no corrosion that could possibly hurt it, and it is the corrosion that is apt to cause inflammation. I should not feel from my own experience that it was better to adjust platinum to the gum tissue than gold. Anything that is sterile and clean will be readily accepted by the gum tissue, and if it is not sterile and clean it will not be accepted.

Concerning the building of a little filling to keep the clasp in position, where the tooth is very conical, that might have to be done, but the only time I had to do it was where I did not make a perfect fit of the clasp and had to build out the tooth to fit the clasp, rather than fit the clasp to the tooth.

Concerning the bridge constructed underneath here, I have by a curious coincidence had to remove one that came from the hands of another dentist (of course, my work never fails!). All under here was a space, and the patient complained of such inconvenience that he begged me to remove it, and I did. As that is the only one I have seen, I am not able to judge.

Dr. GOLDSMITH. Was it shaped like that,—the cross-section?

Dr. HEAD. While we have been able to teach Divine Providence many things, and while we may be able to give Him many good points, in general He knows best His own business, and if we can make these appliances conform to the original we are less apt to make mistakes than if we branch out on new lines.

Dr. FREEMAN. While Dr. A. C. Hart, of San Francisco, was living, he informed me how he made his bridges, and he always cut out a small piece of gum, fitting a little platinum piece under the gum close to the bone tissue, in that way setting it up as near nature as possible.

Dr. Turner read the paper of Dr. LEO GREENBAUM, Philadelphia, on "Root Fillings and their Relative Value." (Printed in full in

the September issue of the DENTAL COSMOS, at page 910.) The paper gave rise to the following

*Discussion.*

Dr. W. J. TURNER. This paper is a very practical one and a particularly good one. It is so short that we can take it all in and remember it. There is not much that I want to say about it, however, except that it is valuable because it goes into a line of work that very few of us can follow out. If we treat a tooth in our private practice, and it remains comfortable, we have no opportunity of opening it up afterward to ascertain the exact condition. We are only too glad to have it all right, and the patient certainly does not want it interfered with to see what the treatment has accomplished. So if anyone has this opportunity in dispensary work, most valuable knowledge may be obtained, and we appreciate its being presented to us. I think that the point to be brought out in this paper is that the smaller the amount of pulp tissue remaining in the pulp-canal, the less material there will be to decompose and give rise to subsequent trouble; and we should not give way to the temptation to slight this work where the canal is difficult or we think impossible of access. The results shown would urge us to exercise a little more patience, to keep at the work a little longer, and we will find that root-canals into which we cannot at first insert a broach will gradually open up, and we will accomplish more than we thought we could.

I must confess to a little disappointment in the showing of mummifying paste. I do not think many of us want to use it where the pulp-contents are easily removable, but we find cases where such removal is most difficult or beyond our power. Sometimes the root-canals are so small that we do not even find the openings into them, or if we do, we penetrate only a short distance, and it would give us a very comfortable feeling if we were certain that this mummifying paste would take care of anything left there; but, judging from the results presented in this paper, we cannot place much confidence in it, and we must continue the work as long as there is any possibility of obtaining an open canal, and try to get our filling as near as possible to the end of it.

Dr. WEBSTER, Toronto. I am very much pleased with the most admirable paper of Dr. Greenbaum. One point I would like to ask some questions about, and that is the use of sulfuric acid for the purpose of enlarging root-canals, making them more accessible. In practice I was never able to do that successfully to suit myself; in experimenting in the laboratory, I failed in the same way. Taking a canal that is too fine for access, how is the sulfuric acid gotten down to the place that is so fine you want to enlarge it, and not put where you do not need it? As for enlarging canals, I am not a success, and there are many gentlemen who have been successful in that connection; I hope they will explain how to do it. I have asked students to do it in the laboratory, but with the same success that I had. The fact is, I do not know how, and I am trying to find out.

UNION MEETING OF THE MARYLAND STATE DENTAL ASSOCIATION  
AND THE DISTRICT OF COLUMBIA DENTAL SOCIETY.

(Continued from page 1071.)

THE reading of the paper by Dr. H. J. ALLEN, "A National Dental Certificate of Qualification" (see page 1070, October issue), gave rise to the following

*Discussion.*

Dr. FINLEY, Washington. I wish to congratulate the gentleman who has just read this paper on having presented a new line of thought on a matter that has been of considerable interest to the profession for a number of years. He is trying to get at the real situation, and offers a scheme by which the dental degree and the dental license may be harmonized. It is in a sense utopian, but this we have a right to be if we are to succeed. The main suggestions heretofore have been vain attempts to harmonize the laws of the different states. The principal objection to the plan will be that each state will be jealous of its rights as to how it shall conduct its own affairs. If too high a standard be set by this board it will probably be entirely ignored by those states that have a lower standard, on the ground that they are entitled to as much consideration as any other state. To my mind the point that these three bodies which he suggests are allowed to appoint the voluntary board of examiners is a weak one from the fact that these bodies have no legal standing, with one exception, on account of not being incorporated. The National Board of Dental Examiners is the only one that is incorporated. Possibly if the three bodies were incorporated their action would have some standing in the eye of the law. The point brought out as to the certificates which would be granted by this board giving a man the privilege of entering the army or navy dental corps, I think would be an admirable idea. but am afraid it would be hard to enforce through legislation, as Congress is so jealous of its political rights. I should like very much to have this idea developed and discussed, with the result of final success along this line.

Dr. L. ASHLEY FAUGHT, Philadelphia. I am not connected with any state board now, but I am interested in the work of education. I would say regarding the paper that it is decidedly utopian; the whole subject seems to be so. There has been for a long time a great effort made to bring about some interchange of license between the different states. The advantages to be gained by such action have never been clear to my mind. It occurs to me that they are not commensurate with the effort put forth. I cannot see how one would care to be traveling around from state to state. The large majority of practitioners locate as soon as they graduate, and usually settle down to stay there until they die. I do not think that the interests involved are at all as great as they seem to be to those who are clamoring for this interchange of licenses.



Dr. W. E. DIEFFENDERFER, Washington. I think this interchange of license would be of great advantage and very desirable to one who might desire to change his residence on account of property interests or possibly on account of health. Dr. Finley has mentioned the main objection,—jealousy between the different states. This great country of ours, made up of different states, should be one in the sense of allowing a resident of one state equal privileges in other states. I certainly think that we ought to have the right of changing from one state to another,—perhaps we all would not want to move, but we ought to have the privilege,—but whether the suggestions proposed would grant us this or not is, in my mind, a question.

Dr. R. H. JONES, Wilmington, Del. I was very much struck with the idea of the paper. It is something new in the way of a proposed settlement of the question. I agree with Dr. Finley that each state having its own particular laws would be slow to give way to a board of this kind. When they attempted to compromise the laws of the different states they would strike a great many snags. There is a great difference in the laws of the different states, and those who have had experience in this line know that some of the states have very slack laws and others have strict ones. But, as I said before, this idea struck me as being a new one, and I believe it will bring the matter before the profession in a different light from any in which it has ever been presented.

Dr. WMS. DONNALLY, Washington. I glanced over Dr. Allen's paper this morning, and I see in it some good suggestions; one especially is that it will bring about concert of action of the part of the members of the societies. It will lead to the adoption of a standard for the boards and colleges. There is a great difference in standards that are followed by the different colleges, and the difference is greater among the boards. If those representative bodies would agree on a certain plan I believe a majority of the states would accept it. After a few of the states had agreed on a certain standard the other states would follow rapidly. It would probably be slow in starting, but it would gain in popularity in a few years. There have been suggestions upon suggestions on this question, but they have never led to anything; there has been no harmonious effort to bring this question to a logical conclusion. I believe that if the societies will come together and work with unity of interest for the adoption of a plan, the different states will be willing to yield somewhat in order to come to a definite solution of this problem.

Dr. MILLS. I would like to ask the gentleman who read the paper two questions. Do I understand him to mean that twenty-five dollars would be required of every candidate before the board, or do I understand him that twenty-five dollars would be paid each examiner for services rendered at every meeting of this board for the examination of applicants.

Dr. ALLEN. I meant twenty-five dollars from each applicant.

The men who compose the board should be compensated for their time. It is not proposed that they should serve for nothing. As to the amount of compensation (exclusive of any possible appropriations from the three affiliated associations) it must remain nominal by the division of the fees of the candidates presenting for examination.

Dr. J. H. LONDON, Washington. I think the paper is in the right direction. It has been before the profession before, but we will have to keep on driving at it until we accomplish what we wish. With reference to having a national board to meet at one place, it may be a hardship for a good many young men to attend this meeting, as a good many young men just graduating have not the means. Also it occurs to me that a good many of the different states would be loath to recognize a national board. An arrangement might be made by which the national board would forward the examinations to the different state boards, and they could all hold simultaneous examinations just as they do in the army and navy now for entrance to West Point and Annapolis. This might be a way to overcome the jealousy that might exist between the different state boards and the proposed national board.

Dr. B. HOLLY SMITH, Baltimore. The essayist is not to be discredited because there seems to be a rather poetic elasticity to his plan. A plan something similar to this will have to be adopted, and it is coming. The question is whether it will be to-day or to-morrow; it certainly will come. We live in a country where the decisions of the one great head of the nation are felt to the remotest ramifications of its territories, and the laws of its various states must be changed until uniformity is attained. We are getting more nearly one people and one sentiment every day, and there will come a time when the jealousies that now exist between the different states will vanish. Therefore I welcome the essay and this proposed plan of unity of action. I do not agree with Dr. Faught when he says he cannot conceive the benefits to be derived from such a plan. One of the great benefits that I can conceive is the lengthening and broadening of the reputation of our degree. If the degree is good enough to allow us to practice in the District of Columbia, it is good enough to allow us to practice anywhere in the world. That is the kind of degree we want, and that is what we will come to some day, and I think we ought to regard ourselves as preachers and teachers to this end. I congratulate the society in having a member that has enough spirit to bring out this ingenious suggestion.

Dr. WMS. DONNALLY, Washington, D. C. While our diplomas at present have no legal force in foreign countries, they have a great moral force, especially in England; in Germany and some other countries it is entirely different. They have been much imposed upon by quacks who have American diplomas obtained under questionable circumstances, and their services have not been what they should be, and we cannot expect much of Germany until we have

redeemed ourselves in proving to her the value of American diplomas and the value of our services. There is one point that has not been brought out in this discussion, and that is the fact that it will encourage these perambulating fellows that go about over the country imposing upon the people. That reminds me of a case we had before the state board. A fellow came up before us for examination, and he had licenses from fifteen different states. Upon investigation we found that he was entitled to all of them but fifteen,—not a single one of them was he entitled to! He afterward came back to the District to practice, as this is the Mecca for quacks and broken-down politicians.

Dr. L. ASHLEY FAUGHT, Philadelphia. Dr. Smith misunderstood me. I simply thought the advantage to be gained was out of proportion to the effort that is being put forth to secure this interchange of licenses. Of course, it is true that a few of us might want to change our location in cases where our property interests or health are involved, but these cases are few. This proposed law would only serve to magnify the jealousy between the different states, and this itself will defeat the measure. When the profession sees the necessity of such a law they will come forward with one great unity of purpose and it will be an accomplished fact.

Dr. W. A. MONTELL, Baltimore. I think Dr. Allen deserves some credit for this paper, and while I do not agree with him in his proposed solution of this problem, I feel that there is going to be something done along this line. There is a growing demand for some law of this kind, but the trouble with Dr. Allen's suggestion is that he is creating another board. We are overcrowded now with boards, and I cannot agree with him that it would be advisable to create another. Before I practiced dentistry, I was in the commercial world, and my observation there,—and it is the same way in every other field,—was that when you appointed a boss you had to have another boss to look after the new one, and so with this board question; if we appoint this board we will have to have another board to watch this new board. When the state boards were first appointed it was with the idea simply to decide as to the reputable graduates and registered diplomas. The examinations were simply discretionary, and they could register the applicants without any examination. This was left to their discretion.

Dr. C. J. GRIEVES, Baltimore. I cannot let this subject pass without a word. The paper appeals to me, and I think it in the right line. We must have the ideal before we can accomplish the real, and I think Dr. Allen has the right ideal. The details are secondary, and can be perfected later. The colleges have been brought up to a standard and have certainly been benefited thereby, and I fail to see why that standard should not prevail among the boards as well as in the colleges. In every field we see to-day the value of adopting standards and their greater working unity. Take for instance, our vast railroad system. Twenty years ago, if an engine or car of one road was disabled out of its territory it was perfectly helpless, and had to be returned to its own road before



being repaired, but to-day all parts are interchangeable, and an engine or car can be repaired as well on the Pacific coast as in its own shop. The great success of the Pennsylvania railroad is due to the fact that the standard prevails. All of the great changes in a system more complex than our own were accomplished by association work in railroad conventions, and I believe we would realize even greater benefits if one ideal of dental education prevailed.

Dr. MILLS, Baltimore. The medical profession is having the same trouble on this line that we are having. They are discussing the question and trying to formulate a national standard for the government of all state boards, both in relation to examinations and reciprocity; not to have authority to order, but to advise.

Dr. FINLEY, Washington, D. C. There has been the suggestion brought out that the dental examining boards should have a standard as well as the educational institutions. To my mind we will have the same trouble that they have if we attempt to adopt a standard, especially a high one. It is almost impossible to adopt a uniform standard on account of politics, it being such an easy matter to influence one or two members of a committee of any legislature or of Congress, and they in turn can prevent the passage of any measure proposed for the improvement of an existing law. We had an instance of this here in the District this spring. In attempting to change our law, one member of the District committee had our amendment tabled, and in that way killed, I presume at the instance of an interested party; and yet it is reported that the Board of Dental Examiners of the State of New York are able to control the legislature so that they can have enacted changes looking to the improvement and elevation of standards, and likewise prevent any adverse legislation.

Dr. R. H. JONES, Wilmington, Del. In our state one of our professional brethren wished to go away from the city for the summer and to leave his office in charge of his brother, who had had no course in dentistry at all. We attempted to prevent such a thing as this by presenting a bill, and he said, "If you try to pass that law I will kill it;" and he did kill it. He happened to have some influence with some member of the committee that had it under consideration, and it was killed in the committee room. This shows how a law may be prevented that would do good, just simply to allow one man to take a little trip in the summer and leave his office in charge of a man who is not a practitioner.

Dr. ALLEN, Washington, D. C. I particularly desired to hear the views of others on the subject. I do not claim any originality for suggesting the main body of the question. As Dr. Mills says, the subject has been touched upon in medical circles. At the annual meeting of the American Medical Association, to be held in Saratoga next week, the question of organizing a volunteer national medical examining board is to be discussed. It occurred to me that we ought to be in harmony with the medical profession by discussing the dental aspect of the same question, and that is why I have brought up the subject. The details of the organization and

working of a national board are not difficult, and numerous suggestions will occur to anyone. No plan covering such a broad field can be presented that is free from all objectionable features, but it is reasonable to suppose that remedies may be suggested for any minor defects that develop upon careful consideration of the subject. The ideal that we strive for must be so high that many will think it impossible of attainment until the final accomplishment.

This finished the program for the morning, and it was moved that the convention adjourn until the evening session, the afternoon being devoted to clinics.

The members of the two societies were entertained at luncheon, at 1 o'clock, by the District of Columbia Dental Society.

#### FIRST DAY—*Evening Session.*

The evening session was called to order at 8 o'clock by Dr. J. H. London, president of the District of Columbia Dental Society.

Dr. I. N. BROOMELL, Philadelphia, Pa., gave a very interesting and instructive lantern lecture on "Comparative Dental Anatomy, Histology, and Bacteriology," after which ensued the following

#### *Discussion.*

Dr. THOMPSON, Washington. The lecture is one that deserves more than passing remark. There is a lesson to be learned along the line of comparative anatomy. By examining the teeth of the lower animals we can learn their method of living, the character of the food, etc., that the animal lives upon. Take, for instance, the movable teeth of the shark; we can learn from that that he naturally has to live on other animals. His prey has to be caught very quickly and the teeth are so provided by nature that they are movable in order to in many instances prevent their breaking. Also by studying the forms and character of the teeth of the different animals we see proof conclusive that man is an omnivorous animal, having the combined peculiarities of the teeth of a great many carnivorous and also of herbivorous animals. His teeth are adapted to all the different kinds of food.

A MEMBER. I think the society should be very thankful to Dr. Broomell for the clear manner in which he has shown us the slides giving the developmental stages of the teeth. The impression made on my mind with regard to the teeth at the fourth, fifth, and sixth week of foetal life I shall never forget. I feel that we come to these society meetings to learn, and this is one of the best methods we have of learning.

Dr. MONTELL. I have only words of commendation for the entertaining and instructive lecture. I fully appreciate the amount of labor and work that Dr. Broomell has performed in gathering this collection of specimens, for it has taken me about six years to get together a somewhat similar collection. This work is of great value and is being brought out in the colleges more than ever be-

fore, and I think the association should feel very grateful to him for the work done.

Dr. FINLEY. I would also like to offer my word of praise for this lecture by Dr. Broomell. Certain points have been made clearer to me than ever before. I think it not inappropriate that we give Dr. Broomell a rising vote of thanks for his presence and instruction, and I make a motion to that effect.

Motion carried.

Dr. I. N. BROOMELL. I desire to thank the members of the two associations for the kind words in appreciation of my effort. I wish to say a few words in regard to the study of temperaments as noted in tooth-forms. The value of this cannot be overestimated. I have contended for a number of years that artificial teeth in edentulous cases could not be successfully constructed without consulting the temperament of the individual; and that the selection of a certain mold without this consideration would be more or less faulty. I have contended that persons of certain decided temperaments require special forms of artificial teeth, these to be in keeping with the temperamental type. For example, the decided nervous type certainly requires a differently constructed denture, so far as form and arrangement of the teeth are concerned, from those of the lymphatic temperament. Consider, if you please, the result of a denture ground to interlock when placed in the mouth of an individual whose natural teeth were devoid of cusps and which were accompanied by a decided lateral motion. The occlusion would be positive, and not at all in keeping with the inherent movement established long before. Such a dental arrangement would be entirely inconsistent with the habits and best-suited diet of the individual. In regard to the diet, I also believe that the teeth indicate in a measure the character of the food best suited to the person. For example, grain foods are best suited to those persons in whom the overbite and cusp formation is lacking, in other words where the lateral or triturating movement predominates, while, on the other hand, teeth of this form, found principally in the highly nervous type, indicate the necessity for a greater amount of animal substance. I am a strong believer in conforming the dental apparatus to the temperament of the patient.

Dr. WM. CRENSHAW, Atlanta, Ga., gave an illustrated lecture showing the uses of his matrix in contour gold work. Dr. Crenshaw's lecture was practically the same as his paper on the same subject in the DENTAL COSMOS for July, 1902, page 681.

Dr. PAUL W. EVANS, Washington, D. C., then read a paper, as follows:

#### PORCELAIN WORK—GENERAL CONSIDERATIONS.

I have taken as my subject a few general considerations on porcelain for dental purposes and its method of use in relation to simple restoration, inlays or fillings, and shall try in as simple words as possible to "synopsize" in a general way the task before the



practitioner when he first attempts this now apparently established, much discussed, and rapidly advancing branch of our profession. My paper is scarcely intended for some of the learned gentlemen present who are considered experts in this ceramic art, and so are thoroughly familiar with the details offered. My object is mainly to help the ones who have as yet never attempted any of this work, in learning what is before them, to help guide their steps in research, and show them the necessary points, in brief, that they are always to bear in mind in order to make a success of an undertaking the path of which is so strewn with discouragements and failures.

The rudiments cannot be too carefully looked into and studied. There is, and has been, much misunderstanding and controversy in regard to this work, its scope and limitations, and the labor connected with it. Porcelain is entirely distinct from all other filling material, and it is successful when properly applied and skillfully adapted, and then only.

The many writings upon the subject have covered the field very thoroughly. But I have found that these writings are mostly on various parts of the subject and more intended for those already somewhat familiar with it, and therefore a general synopsis to help guide the beginner in his research, as before said, is not amiss.

We know that for some years this work has been experimented with, and improved, until now it has progressed to that point where it can no longer be looked upon as a side issue, or a thing only for the specialist. There is no subject in dentistry that has been more widely discussed in the past two years than porcelain art and its use. There is no question that it is now recognized as an accomplished, permanent, artistic, and extremely advantageous proceeding in the cases for which it is suitable. Many lasting and beautiful specimens of this art are being perfected every day by gentlemen who have given very much time and attention to this work, and it is only the backward who now hesitate to take it up.

I maintain that a knowledge of the manipulation of porcelain should be a part of every first-class practitioner's work, and without it he is endangering his standing as an up-to-date man. That a great many will give their entire attention to it alone, in all its branches, within a few years, I do not doubt. But every one of us should at least know how to make and place a perfect filling of porcelain. I am speaking to the men of standing, who have patients that are rapidly becoming educated to the fact that this work exists, and, for the suitable cases, they are beginning to ask for it. It is apparently becoming very general from my observations in the larger cities. In New York and Chicago there are very few of the leading dentists with whom it is not of daily practice.

Its usefulness has been proved by cases of long standing, and its esthetic effect is universally admitted. I am speaking of the work that has been perfectly accomplished and where the selection of the case has been judicious. Some men hold that its field is unlimited; that I would question. But that its field of operation is fairly large is being acknowledged more and more every day. As I have said,

the earnest beginner will meet with many, many failures and discouragements, and he must needs take up this work with the knowledge that his patience and skill are going to be tried to the utmost.

The accomplishment of a perfect piece of porcelain restoration cannot be brought about by any perusal of "papers" or books, or instruction on the subject, until the operator has tried, experimented, and tried over again and has learned by his failures how to progress. The successive steps may be shown, and the different methods, but it is left to the man himself to accomplish his own end. It does not depend entirely upon either his skill as a mechanic, his artistic sense, his judgment, knowledge of colors, and his manipulation alone, but upon the combination of all. A mere mechanic can never make a perfect porcelain filling unless he is artistic, and *vice versa*. Nor can the combination of these two qualities bring about a useful and permanent result unless his judgment has been good, and so on with colors and the manipulation.

I hope I have made it plain in regard to what I have said about this work being taken seriously, and very seriously if a success is to be made of it. It cannot be taken up lightly and a cursory knowledge *only* obtained of how to make a porcelain filling, if you have any care for your own success. You will have failure in your experiments: yes, but you cannot afford to have failures in your everyday work with it (or you will do yourself much more harm than good); and that you are bound to have failures, and constant ones, unless you have given enough study, time, and labor to acquire a proper working knowledge, you will soon discover. A porcelain filling, restoration, or inlay, to be a success must be *perfect*. It cannot be slovenly or carelessly done; if so, it will be hideous and damaging rather than beautiful and artistic. Some men hold that the success of their work depends upon the cement, some upon the matrix, some upon the preparation of the cavity, and some upon "body" and baking, etc. This is all very well; each of them is more or less important, some much more so than others, but the real success of porcelain work depends upon the combination of all (just as it does in the man's requirements), and neglect or ignorance in even one of the many requisite contributory parts will destroy the perfection necessary.

It is true we are progressing daily, and very rapidly now, in new processes and methods, but a few general headings will still exist for some time to come, and these I will briefly consider.

Before starting to take up this work, if one has been persuaded that it is worth his while and the spending of his time, the question of what porcelain would be best to use suggests itself. Briefly, since there is still a great diversity of opinion, one must finally decide for himself.

Porcelain workers being divided into the "high-" and "low-fusing" men, we have two sides to consider. The consensus of opinion is toward the high-fusing bodies at the present time, and I do not doubt that it will remain so. Personally I work with the high-fusing body and prefer it, but I have seen some very beautiful work

done with some of the latest low-fusing body and will not condemn it, as I have heard so many do, until it is proved of no benefit. One thing I can say, the high-fusing body has proved its durability as to color, hardness, etc., and that important fact I have not as yet seen *proved* for the low-fusing. I refer to the latest products; the earliest ones are out of the question. The low-fusing has the advantage, if it may be so called, of enabling one to use a gold matrix, but the great advantage of this for most cases I doubt, as I consider it counteracted by not having to use an investment as with the platinum matrix. Still, for some cavities, where porcelain might be used with advantage and where only the gold matrix might be used with assured success, a knowledge of the low-fusing body of Jenkins may not come amiss.

Among the high-fusing bodies I would mention The S. S. Whites', the Whiteley's, and Brewster's and Close's as a base. The only low-fusing I have seen successfully worked is Jenkins' Improved. I have not, however, seen it after any great length of wear.

Necessary qualities of the body selected are stability of color, point of fusing, strength, density, least tendency to porosity, and least amount of shrinkage.

After having decided upon a body, comes the selection of the furnace. We have the oil, gas, gasoline, and electrical. It does not matter which is selected as long as one learns to *know it perfectly*. That is the main point; one must be able to gauge the degree of heat present without error, and the length of time necessary to bake perfectly the different sized masses of porcelain body at the different temperatures. This is necessary because there will sometimes be slight variations, and these slight variations may mar the work if one is not on the lookout for them. The electrical furnace of Hammond is undoubtedly very satisfactory, and is used by a great many workers.

Having the body and furnace, experimental bakings of the body in the furnace at different degrees of heat, and with smaller and greater quantities of material, should be made, and the effects noted.

The porcelain body is best mixed into a paste formed simply with the addition of simple distilled water. The instruments used in packing and building up are specially made spatulas and the like. Fine camel's-hair brushes are used and preferred by most workers. The excess of moisture in the porcelain can be brought to the surface by lightly tapping the pliers (which are of a special make, with clamp), in which the matrix is held. A small piece of blotting or bibulous paper will then, if used, absorb the excess. This tapping also helps to settle the body in position.

In using an electrical furnace, the work must always be laid upon a platinum or nickel tray, which is sprinkled with silex before baking and introduced into the muffle in this manner. Be sure it is *well dried out* before baking. Most porcelain bodies shrink about one-fifth their size, and this must, of course, be taken into account.



In all this work two bakings are necessary, sometimes more. The first is called the "biscuit bake," and too much importance cannot be laid upon it. The appearance of a proper biscuit bake is "somewhat granular with small shining facets over its entire surface." The tendency is to overbaking, and this we must try to avoid. It will in most bodies entirely destroy the color, besides making the porcelain porous. The biscuit bake, if overfused, makes the body porous; if underfused, excessive shrinkage will be present in the final baking. In large cases, Close's body or small chips of broken-up porcelain teeth will help to prevent any excessive shrinkage.

The average fusing-point of porcelain is around 2500°F. (Close's, 2600°F.).

Porcelain always shrinks toward its greatest bulk, and therefore we may often lessen the danger of contraction of our matrix (the name given the material forming an impression of the cavity, in which the porcelain is baked) by making a cross or hole in the center of the "body." This will cause it to spread, in the biscuit bake, toward the margins, instead of toward the center. In the final baking the porcelain is brought to the point of fusing and has the gloss characteristic of artificial teeth. The time of fusing an ordinary size filling varies from twenty seconds to three minutes, according to the kind of furnace used and the character of the "body." All these points may be thoroughly gone over and understood in the laboratory as a preliminary training. Simple cavities in teeth out of the mouth may also help the beginner.

Among the advantages derived by the patient from a porcelain filling, the primary one is the *color*. For cavities that, filled with any material other than porcelain, would be glaring, this esthetic feature is worthy of much consideration in many cases. Porcelain is *non-conductive*. A sensitive cavity will tolerate it perfectly, and it can therefore be placed in many cavities where the pulp is in close proximity. The non-strain upon the tooth in its introduction is also a great advantage. There is more ease for the patient, less nervous strain and wear and tear, than is necessarily connected with the introduction of most gold fillings. Its *durability*, when the case is judiciously selected and the work perfectly done, is, although still questioned by some, proving itself more and more daily, and this, combined with its added esthetic advantage of color, makes it well worthy of a permanent place in our daily work. To quote from Dr. William Capon, of Philadelphia, "A porcelain filling in position represents the natural strength of the tooth nearer than anything else, with the advantage of not having jarred or endangered the weak part in obtaining these results."

The selection of the *cases best suited* is mostly confined to the six anterior teeth, although not restricted to their field. The cervico-labial cavities in the upper front teeth, approximal cavities, fractured corners, and positions where loss of contour has been great are those places most worked upon. The appearance, strength and durability of the finished work, and the advantage to the patient must guide us in our selection of the cases.

Generally speaking, in the *preparation of the cavity* it must be free from any undercuts that would prevent the withdrawal of the matrix, the walls must be perpendicular or nearly so, avoiding all beveled margins, and the edges, the importance of which cannot be magnified, must be square, sharp, well-defined, and absolutely true. Remember always, where any strain is to be brought upon it, that porcelain is "strong in proportion to its size," and an inlay or a filling with the slightest frail margin will prove defective.

The making of the *matrix* is the next step, whether of platinum or gold, and to be successful it must be perfectly adapted to the cavity. Its form on removal therefrom, and during the construction of the inlay, must be preserved intact. These essentials are only accomplished with the exercise of much labor and skill, but upon them depends the *fit* of the inlay.

Many methods for obtaining a perfect matrix are used by different workers, and to fully cover this ground would alone require a lengthy paper. For adapting the platinum or gold to the cavity, wet cotton balls, spunk, specially made rubber-tipped instruments, ball burnishers, and others are used. To facilitate its being held in place the material is used in sufficient size to be readily held firmly by the fingers, or, in the final burnishing, a thin strip of thin rubber dam tightly stretched across the matrix has been suggested. The platinum matrix is best "teased" from the cavity, and is handled without investment by the majority of workers.

Enough space to work in is a requisite that cannot be overlooked. Some pack the matrix with wax to hold it in shape during removal and then invest it. Others take an impression of the cavity in cement (using pulverized soapstone as a separator) and then make a mold, also of cement, with which by special means successive matrices may be swaged.

The tearing of the central portion of the platinum will not affect its use; with gold the base must be intact. Platinum is burnished from the margins toward the center; gold is worked from the center toward the margins. The annealing of the platinum,—thickness one one-thousandth of an inch,—in the furnace for five minutes will greatly improve its working qualities.

After the matrix has been obtained, or before if desired, the *color* of the tooth to be matched must be determined. All will readily see how much depends upon the success of this step also; this is where the artistic sense of the operator will be put to the test.

Granting that in the preliminary experiments a set of sample shades have been made of which a perfect record has been kept, and that the operator has a knowledge of the basal colors in his outfit, in making a selection for the case in hand one must consider many things. Among them, I would mention briefly that very few inlays or fillings will be satisfactory in their shading where only one color has been used. In approximal cavities, one may match either the tip or the neck of the tooth, but not both unless two shades have been blended, mostly yellows and blues. If this cannot be done, owing to the smallness of the filling, the bulk of porcelain should be composed of a yellow shade topped off with the color to match

the tooth. This will give the work a soft, blending effect and copy more closely the translucency found in a natural tooth. The proper packing of the porcelain will also affect the color, owing to the air-spaces found where it has been carelessly packed; these air-spaces lighten the shade.

Another thing to be considered is its thickness, and what effect the color of the cement will have upon the work when finished. It will darken it if thin, and this must be taken into consideration. The question of "shadows" in approximal spaces is a difficult one to successfully master and must be given much attention. A colorless body for lighting is used to do away with the shadows as much as possible. Approximal inlays should always be a shade lighter than the tooth, in order to match in appearance, as nearly as we are able, the natural organ.

Having selected the colors and decided upon the color scheme, we proceed with the methods of mixing, packing, drying, baking, building up, and rebaking, described previously.

The custom of retrying the matrix in the cavity after the biscuit bake is much followed by most operators. The margins, though, must be free from "body" after this bake, to permit of this being done. It is not a very feasible procedure in small cervical cavities.

When the inlay or filling has undergone the final baking, the matrix is carefully removed from the porcelain. Always draw the metal *away* from the margin. Then undercut, etch, or roughen, according to the case. The cavity is also given a few undercuts and the porcelain is then ready for placing, after first adjusting the rubber dam. This is not always necessary, but generally advisable.

After the filling has been tried in, its relative position to the cavity noted, and any excess of porcelain contour removed, the cement is mixed and the porcelain placed. Great care must be taken to get it perfectly in position, with all excess of cement thoroughly squeezed out. In doing this, there is danger of breakage, which may be avoided by the use of tape, strips, and wooden wedges. It must be held in position for from three to five minutes. The cements mostly used are the Harvard, and Ash's C. A. S. They are mixed very thoroughly and fairly thin. After the cement has set fairly hard, it may be protected with paraffin and trimmed and polished at another sitting if necessary or desirable.

The foregoing constitutes the general proceeding in this class of work. There are many points which have only been barely touched upon, and others that have been left out altogether, but the extent of the subject precludes detail, which may be found in the many writings that have been published within the last two or three years by much better informed workers than myself.

To conclude, then, we have these general headings to bear in mind as part of the work:

1. Porcelain: Its advantages to the dentist.
2. Advantages to the patient.
3. The selection of cases.
4. The bodies and furnaces used and their qualities.
5. The general methods of procedure, under which we have—



- (a) The preparation of the cavities.
- (b) The selection of colors.
- (c) The making of the matrix.
- (d) The manipulation and baking of the porcelain.
- (e) The placing and finishing.

### *Discussion.*

Dr. A. J. VOLCK, Baltimore. I would like to say a few words in the discussion of this paper, because it deals with a question that is of growing importance to the profession. It is a work that is becoming a very necessary requisite to every dentist, owing to the demand. Our patients all recognize the fact that we are advancing, and they ask, "Doctor, why is it, if the dentists are making such advancement, that you can't put in a tooth a filling that will be invisible?" Such questions make us very uncomfortable. Porcelain, I think, is the solution of the problem of invisible fillings. It seems to me that it has come to stay. There is a very high place for it, and I hope to see it put there, and, as the president says, hope it will "stay put." The most conspicuous truth in the paper is that no matter how much instruction we have on the subject, no matter how much we may read about it, we can't do good work at first and will have to work it out for ourselves. Do not get discouraged, as you will have many failures, but you will have to accomplish this work from experience. Lots of gold workers say that the profession, or rather a portion of it, is turning to porcelain because they can't use gold. I will take my hat off as quickly to a porcelain worker as to a gold worker. I believe that it requires just as much, if not more, skill to work porcelain as to work gold. With regard to the limitation of this work, as the essayist says, its use is not unlimited. Judgment should be used as to where it should be placed. With regard to furnaces, I would like to say, Throw away everything but the electric furnace. Hammond's furnace is the most complete and simple of any I have seen. A muffle can be replaced with no trouble at all when the old one burns out. It is complete, effective, steady, and above all it is clean. The matter of cements is a problem unsolved as yet. Harvard is the best on the market to-day. When we get a cement that is insoluble I think the question of porcelain will be of great deal more importance than it is to-day.

Dr. W. A. CAPON, Philadelphia. I wish to compliment the essayist on the very clear manner in which he has covered the subject. There is very little to be said as to the operative methods. One or two points I would like to speak of. The essayist spoke of using camel's-hair brushes. I would advise against using the camel's-hair. I use a red sable brush, and find it much better adapted to this work than the camel's-hair. Some years ago I happened to run across it in connection with this work and found it the very thing. I would also advise against the use of wax or any kind of material in the making of the matrix. In removing it, no matter how careful you are to wash it out, there will naturally be a little residue, and in the baking of the porcelain this will interfere with

the color very materially. Of course, in extensive work, it would not make such a difference, but in small cases it will certainly interfere with the color and also with the baking and texture of the material, therefore I would advise against its use under any circumstances except in large cases. Porcelain workers here should be thankful to Dr. Broomell for his pictures illustrating the size of the pulp-chamber of the different teeth, and the proximity of pulp to surface of cavity, the pulp being easily irritated by hammering gold or other hard substances,—thus proving the advantage of porcelain over other materials in cavities bordering on the pulp-chamber.

With regard to the different bodies, there is a great deal of difference in the working of the various kinds. I stick to the one that I have proved to be all right and that has given me the best results. In the matter of cements, we have many cements. The gentleman before me spoke of some, but didn't mention one that I have found very good,—Justi's "Insoluble." I have seen fillings of eight and ten years' standing where this cement had been used. I have found it one of the best. I use Harvard, also Ash & Sons', as I like some of their individual working qualities. I do not think it best for all of us to take up this kind of work, and do not think that we all will be suited for this particular work any more than any other kind of work. There are many who have a natural tendency to this character of work and will make a success of it. As to the point of getting discouraged, I never get discouraged now; I simply do it over again. I have done so much of this work that it does not take me long, and it is not much trouble to make it over.

On motion the subject was passed, and the convention adjourned until Saturday afternoon, at 2.30 o'clock.

Saturday morning was devoted to clinics, as follows:

#### CLINICS.

Dr. R. L. SIMPSON, Fincastle, Va., demonstrated the making of what he considers an ideal bicuspid crown as follows: The root is prepared as for a Richmond crown; the band made, fitted, and ground off to be under the gum at the buccal surface, but wide at palatal surface. Solder the floor to the band, leaving a slight projection of the floor like the brim on a straw hat. Trim the cap so that it will pass the approximal teeth; solder the pin to the cap; fill in with 20-karat solder the angle formed by the projection of the floor and the band. Place on the root, and take a bite and impression. Mount on an articulator; select a suitable saddleback plate tooth, grind it to fit, beveling the sides; back up; invest and fill in with 18-karat solder, applying heat from the bottom. (A full description, with cuts of Dr. Simpson's crown, appeared in the April issue of the DENTAL COSMOS, page 328.)

Dr. A. P. BADGER, Baltimore, Md., gave a very interesting clinic on "Little Things in Dentistry," exhibiting models of peculiar cases.

Dr. T. S. WATERS, Baltimore, demonstrated the fitting of an

Evans seamless crown. He prepared the tooth, and fitted and set the crown within an hour after receiving the patient. Dr. Waters claims this crown, when strengthened and stiffened as it should be, to be as good as the office crown. He also claims that the adaptation of this crown is much less painful than that of the ordinary crown.

Dr. Waters also gave a clinic on the bleaching of teeth with pyrozone. His method is to clean out the cavity thoroughly; apply the pyrozone to the cavity and evaporate it by applying heat from the outside. He lines the cavity with a white cement and then places in the permanent filling.

Dr. D. N. RUST, Alexandria, Va., filled a cavity, extending under the gum, on the labial surface of an upper first bicuspid tooth, with non-cohesive gold, without the use of the rubber dam.

Dr. L. W. FARINHOLT, Baltimore, gave a clinic demonstrating his method of using tin and gold in combination. He fills the body of the cavity with tin foil, and covers this entirely with a veneering of cohesive gold, making virtually a gold filling with less danger of injury to the pulp from thermal changes.

Dr. GEO. B. WELCH, Washington, filled a cavity in an upper central incisor, taking in a large portion of the corner and the entire cutting edge of the tooth, with Watt's crystal gold, unannealed, using an old instrument for plugger and a raw-hide mallet for condensing. Dr. Welch exhibited a gold filling of thirty years' standing that had been put in by his method.

The clinic by Dr. WM. CRENSHAW, of Atlanta, Ga., consisted of restoration to original form of the upper left second bicuspid, first and second molars, employing the "Contour matrix" originated by him. These operations consisted of building the approximal walls of each of the teeth with tin foil, finishing with cohesive gold.

Dr. E. E. CRUZEN, Baltimore, demonstrated a method of replacing a broken crown in cases where it was impracticable to remove the pin. His method is as follows: A drill or trephine is run down around the pin; a tube is made of platinum to fit the post, which is then soldered to the cap as for a Richmond crown, after which the procedure is the same as for any other crown.

The clinic of Dr. S. W. BOWLES, of Washington, consisted of the making of a platinum matrix for porcelain inlay work with the Ash Swager, as follows: The cavity is prepared in the usual way. After taking the impression with modeling compound, a plaster model is made, and with this model in the swager you can make as many matrices as you like, or, in case it is misshapen in the baking, it can be re-swaged without any trouble. Dr. Bowles claims for this method the advantage of a saving of trouble and pain to the patient, also its enabling the operator to do his work in leisure time.



Dr. GEO. E. HARDY, Baltimore, demonstrated his method of making gold inlays as follows: A piece of No. 40 gauge 24-karat gold plate is burnished into the cavity, removed and strengthened with 22-karat solder over the bottom. At the same time he solders a piece of 22-karat plate in the bottom, which enables him to remove it after the second burnishing without misshaping it. He then places it back in the cavity and re-burnishes the edges; removes it; paints the under side with whiting; fills the matrix and places it in the cavity, polishing it to fit perfectly. Dr. Hardy claims that gold inlays are especially adapted and indicated on cutting surfaces of anterior teeth, and for large bicuspid and molar cavities.

Dr. W. A. CAPON's clinic consisted of the making of a bicuspid porcelain crown, as follows: The tooth being prepared, a platinum band is fitted, the joints being lapped instead of butted, enabling it to stand the heat better. After the band is fitted it is shortened to allow for the porcelain of the grinding surface. The buccal surface of the tooth is considerably beveled from the gum line toward the grinding surface to allow for the facing; the front of the band being burnished to this surface, it is removed, and a thin piece of platinum, No. 50 gauge, is placed over the tooth, and the cap pushed to place. While in position, porcelain is packed on the grinding surface, and some on the face, and a thin veneer, made for the purpose, is placed in position; then the whole piece is removed, dried, and baked. Placing it back on the tooth, it is built up to the proper contour, shaped, and baked again. This crown Dr. Capon claims to be in a class by itself for artistic and natural appearance combined with strength. He advocates the use of this crown for abutments for all-porcelain removable bridges, telescoping it over a gold cap made and cemented on the tooth.

Dr. FREDERICK PRIMROSE, Baltimore, exhibited casts of a case of irregularity treated by the use of Angle's system. The casts covered the case from the beginning, the child being nine years old,—extending over a period of four years, until correction was completed. Dr. Primrose showed how easily the system could be made and applied. The casts showed that good results had been obtained from its use.

Dr. A. D. COBEY, Washington, filled a simple and a compound cavity with Abbey's non-cohesive gold, showing, especially, its adaptability to extensive contour work.

Dr. H. F. SNYDER, Baltimore, Md., presented a very interesting case of sarcoma in the speno-maxillary fossa, in which the pain was manifested in the teeth. The teeth being thought to be the cause of the trouble, several were sacrificed without any relief. Finally two extensive operations had to be resorted to. The first operation consisted of exploratory craniotomy in the temporal region for suspected intracranial growth, ligation of carotid artery, removal of Gasserian ganglion and growth. Permanent relief was

not given, however, until the second operation, one month later, which consisted of partial excision of the superior maxilla to expose the tumor, which was removed.

### SECOND DAY—*Afternoon Session.*

The meeting was called to order at 2.30 by Dr. Grieves, president of the Maryland State Dental Association.

Dr. L. ASHLEY FAUGHT, Philadelphia, Pa., read a paper on "Oral Hygiene."\*

### *Discussion.*

Dr. MONTELL, Baltimore. I think this paper deserves commendation in that it is a plea for prophylaxis. Oral hygiene is at the bottom of all success in our operations. Our success, frequently, is altogether dependent on the hygienic condition; according to the cleanliness maintained will be the success of the operation performed. I agree most heartily with all that the essayist says. He has shown very clearly and correctly that the subject is one that has been greatly neglected, and also how we can remedy the evils. We do not charge sufficiently for our work to impress upon patients its value. We should increase our fees to the extent that it will impress upon them the value of the work done, and they will appreciate our services more. How frequently has the operation of cleaning the teeth been carelessly performed! Most practitioners look upon it as an operation that any tiro can perform and one of no importance at all. I regret to say that the impression is obtained in many instances from the college clinics. The demonstrators look upon it as an operation for freshmen only.

Dr. Faught's remarks reminded me of expressions I have heard from the lips of one of the fathers of our profession,—one who towers above the rest of the profession by virtue of the superiority of his work, his honesty of purpose, and the purity of his religion. I have frequently heard him speak along this same line with regard to the duties and obligations that the dental profession owes to its *clientèle*.

When it is proposed, though, for us to have our patients return to us every month, I cannot agree with the idea, and for myself will say that it is not necessary for my patients to return monthly, as I am glad to say that they do not have recurrence of their trouble so often as that. I think we do ourselves and our patients an injustice to subject them to surgical operations every month. It is too severe on us as well as our patients. I hope, for my part, not to be forced to have my patients return to me every month for treatment.

Dr. B. HOLLY SMITH, Baltimore. I feel that I am called upon to make some defense of the gentleman who has been referred to by Dr. Montell. I do not propose that he shall get up before this body and assail a man of the Smith family. I suppose he had reference to Dr. D. D. Smith. I have had the pleasure of seeing some of Dr. Smith's work, and I can only say that it is most beau-

---

\*Dr. Faught's paper appeared in full in the DENTAL COSMOS for October, 1902, page 1020.

tiful and the result most admirable. I have seen twenty-five patients of Dr. Smith's and I have never in my life seen cleaner, nicer, and sweeter mouths than those. Go look into the mountain rill in its purity and sweetness, with its bright sparkling water wending its way down the mountain, and I say to you that I have seen mouths that had been under Dr. Smith's care that were just as clean and sweet to drink out of as that mountain rill. I only wish that the gentleman could be here to defend himself. I want to apologize to the essayist for not hearing all of the paper. I did not know that it would be read at this time.

Dr. FAUGHT, in closing the discussion, said that he had nothing to add except to thank the gentlemen for the discussion of his paper.

The subject was then passed.

(To be continued.)

---

### NEW JERSEY STATE DENTAL SOCIETY.

THE thirty-second annual meeting of the New Jersey State Dental Society was called to order at 10 o'clock, Tuesday morning, July 16, 1902, in the Auditorium, Asbury Park, by the president, Dr. W. L. FISH, Newark.

The roll was called, and the minutes of the last meeting were read by the secretary, Dr. C. A. Meeker.

#### PRESIDENT'S ADDRESS.

The president then delivered his annual address, an abstract of which is as follows:

Reviewing the past history of the society, the speaker noted with pride the evolution of the meetings from a handful of ardent workers, imbued with the spirit of professional and brotherly love, striving to broaden the scope of each succeeding meeting, being ever mindful that "in union there is strength," until to-day the society stands forth as one of the largest state societies, if not the largest, in existence.

He called the attention of the busy practitioner to the advantages afforded for investigation of the latest advances in the line of new instruments, medical preparations, and methods of operating offered by the exhibitors and clinicians.

He noted with regret the failure of the efforts on the part of the profession to establish a dental corps in the navy, paying a tribute to Dr. Williams Donnally, of Washington, for his untiring efforts in that direction, and urged that every member of the society co-operate with him in his future endeavors to have a bill passed that will establish a dental corps in the navy.

He recalled the fact that but a few years ago the profession was struggling for recognition by the medical profession, and that to-day it stands as a recognized branch of medicine.

To the young men of the profession he pointed out the tendency of the profession along the line of original research, and ventured the assertion that from among those present would be developed



some who would stand upon the same pedestal with such men as Miller, Williams, and Black. He also called attention to the growing tendency toward specialism within the profession, claiming that no man could excel in every branch of dentistry, and advised the young men to adopt a specialty.

### *Discussion.*

The president's address was not referred to a committee for consideration, as is customary, but was opened for discussion at once.

Dr. C. S. STOCKTON, Newark, in opening the discussion, said he was especially glad that the president had called attention to the progress of the profession in the past few years. "Are we keeping step with the rapid strides that are being made in other fields? In some respects, Yes. Forty years ago anyone who thought himself qualified could enter the profession and swing his sign as high and wide as he pleased. To-day he must have a satisfactory education and be a graduate of a reputable dental college, and must pass our efficient and watchful board of examiners. This is progress. Crown- and bridge-work is an advance over old methods, and we have some advanced ideas in appliances; but the old filling materials,—gold, amalgam, and cements,—remain about the same, and our fathers did about as effective work with them in saving teeth as we do at present." He lamented the fact that a permanent filling material which would not disfigure the face had not been invented.

Dr. J. ALLEN OSMUN, Newark, commended the address of the president, and especially that portion relating to the protection of the profession against illegal practitioners. He urged every ethical practitioner to aid the committee that has this work in hand, by reporting every case that comes under their observation, and doing everything in their power to assist the committee in bringing the guilty parties to account.

Dr. MEEKER complimented the address very highly. He said he believed that the rule of the New Jersey Society, to advance the workers year after year, was one of the secrets of the success of the society. He noted the fact that it was not so with a great many societies, and in many instances the same men were kept on the same committees year in and year out, and never promoted. He believed the law of promotion of the New Jersey Society was a great stimulus to the ambition of its younger members and encouraged them to do their part as workers.

Dr. W. L. FISH, in closing the discussion, said he only wanted to emphasize his advice to the younger men to come forward and take a stand in the society. He urged them to take part in the discussions, and use their endeavors to make it a young men's meeting.

The president then resumed the chair.

The Membership Committee was called, and Dr. J. E. DUFFIELD, of Camden, chairman, reported several new applications, which, on motion, were referred to the committee for correction and approval.

The president then appointed Drs. Riley, Chase, and Luckey as the committee to audit the treasurer's books.

On motion the meeting was then adjourned, to meet at 8.30 P.M.

### SECOND DAY—*Evening Session.*

The meeting was called to order at 8.30 P.M., and after roll-call, Dr. G. L. CURTIS, of New York, read a paper on

#### ELECTRIC OZONATION IN THE TREATMENT OF NEURALGIA.

The essayist exhibited an instrument for generating ozone, and gave a description of it. The apparatus was of his own invention, and one with which he had conducted experiments along this line for several years. It consisted of a system of coils which multiplied the current as it passed into the machine, by which the essayist said that he was enabled to use any ordinary incandescent current. The force of the electricity thus multiplied was something like one million volts, but with a very low ampère, which eliminated the danger of a shock.

By means of the apparatus a great amount of ozone was generated and thrown off into the air which was being breathed by the patient. The current of electricity was carried to the patient by means of a glass electrode, which also modified the current and prevented any shock.

The essayist claimed that functional activity in a diseased region was restored by oxygenating the blood, and by destroying pathogenic organisms in the body. He said that by restoring the normal circulation the nerve equilibrium was restored.

He also mentioned the fact that in his experiments with this instrument he had treated over five hundred cases of different neuralgic disturbances, and had met with remarkable success in all of them. In a case of ordinary neuralgia, the use of daily treatments, of about thirty minutes' duration, would usually restore normal conditions in about a month's time.

The writer claimed that his apparatus would be a wonderful diagnostic aid in any neuralgic troubles, by reason of the fact that the seat of the disturbance could be readily determined by passing the electrode over the parts, whereby intense pain would be immediately experienced where the abnormal condition existed. He also stated that he had been very successful in the treatment of tuberculosis, syphilis, carcinoma, meningitis, hysteria, sclerosis, neuritis, gout, rheumatism, etc.

Dr. Curtis entertained the society by demonstrating the working of his apparatus and cured several cases of headache for the members.

#### *Discussion.*

Dr. C. B. WATKINS, of New York, in discussing Dr. Curtis' paper, said that he had seen a great many cases which Dr. Curtis had treated successfully, and cited a case that came under his care, where the patient had neuralgia as the result of specific trouble, and Dr. Curtis had relieved the patient with the electric current.

A member of the society asked Dr. Curtis if he had ever failed to get good results from this treatment.

Dr. CURTIS said he had treated one case of sclerosis that he did not succeed in curing. He said the patient improved in general health, but that he did not get a satisfactory result.

In reply to the question, What relation does this instrument bear to the X-ray? Dr. Curtis stated that it was very similar to the X-ray, but much more effective.

The question being asked, What particular value has this apparatus in dentistry? Dr. Curtis in reply said it occurred to him that its most valuable use in dentistry would be from the fact that it would relieve pain.

On motion the subject was passed.

The next order of business was a paper from Dr. A. H. THOMPSON, Topeka, Kans. Dr. Thompson not being present, Dr. Stockton read his paper, as follows:

#### ETHNOGRAPHIC ODONTOGRAPHY.

The essayist called attention to the importance of the study of the differences in the teeth of different races, and noted with regret the lack of attention to this work in the past. He said that the study of comparative dental anatomy among lower animals naturally leads us to the study of comparative anatomy of the different races, and that there must be differences in the teeth as in other organs.

"There is a great lack of material from which to make generalizations in regard to the ethnology of the teeth, as has been bewailed by many writers. Anthropologists have given us the differences with regard to many other parts and organs, but nothing in regard to the teeth that to dentists, who are accustomed to observing the minute anatomy of these organs, seems to be of any value. Therefore, it would seem to be our duty, as dental specialists, to set about gathering material for a scientific investigation of the ethnology of the teeth, to the end of making deductions that would be of positive value."

The essayist called attention to the special opportunities afforded the profession for this character of study, from the fact that dentists were scattered all over the civilized world, and urged the dentists to begin making investigations and observations on all races available. He said the museums had a great many skulls which could be studied to great advantage, and urged all who were interested in this work to take it up at once with a view to making it a scientific and valuable study.

On motion the discussion of the subject was deferred until the next meeting, and the society adjourned, to meet again at 10 A.M., Thursday.

#### THIRD DAY—*Morning Session.*

Meeting called to order at 10 o'clock by the president.

After roll-call, the society listened to a paper from Dr. R. OTTOLENGUI, of New York, on "Should Children's Teeth be Filled with Gold?"



The essayist began by taking the affirmative side of the question, saying that when he first entered the profession the practice of filling children's teeth with gold was strongly opposed by a majority of the best practitioners of the day, many advocating extraction where decay had set in, and some even the loss of all four molars where one had to be lost from decay. He said he was proud to say that from the time of the beginning of his apprenticeship he opposed these views, and when he began his practice he commenced by saving teeth and not by sacrificing them. After determining to save all children's teeth possible, the most serious propositions that confronted him were: Should every cavity be filled as presented, without extending the cavity beyond the area of decay? also, What material should be used?

Day after day he saw amalgam fillings in children's teeth which had been unseated by decay, and had to be removed and replaced by another filling. His observations were the same with regard to the temporary filling materials, so he came to the conclusion that permanent operations should be aimed at, and laid down the following rules: The cavity must be extended beyond the area of decay; the deep sulci should be cut out; the filling must be of gold; and lastly, the filling must never be made of amalgam. He called attention to the fact that he was alluding to occlusal surfaces of first permanent molars, and added that he had never varied from this rule for twenty-five years, and from his own success in this line he had had no cause to alter his practice. To illustrate the general impression made by gold work, he said that probably all present had seen many mouths of children with gold fillings in the occlusal surfaces of molars, the approximal surfaces of bicusps, and in the anterior teeth, and invariably we would all remark that the patient had been in good hands. How many could say the same for mouths filled with plastics? The essayist granted that plastics were valuable filling materials in some instances, but, notwithstanding this, he repeated that when we saw mouths filled with these materials we always saw conditions where improvement was possible, if not absolutely demanded.

He said he believed that many operations in children's teeth made with gold were failures, but those failures were personal failures, and not the failure of the method. He said that most operators were only too ready and willing to humor the children, and save time and trouble to themselves, by putting in amalgam and cement fillings. All operators did not have the courage to attempt gold work in children's mouths; they were only too glad to avoid it. He said children had always been his favorite class of patients, and he believed if they were handled properly, this work could be done as well in their mouths as in older ones. He did not advocate attempting large extensive operations at one sitting, as many operators did, thereby tiring out the little patients and making them dread the next operation. He said the operations should always be divided into three separate sittings: the first one to prepare the cavity, the next to fill the tooth, and the third sitting for finishing it.

The essayist ridiculed the prevalent idea that teeth were too soft

for gold. He claimed that the relative hardness and softness of the teeth had no bearing whatever on the case, and that no teeth were too soft for gold fillings. As an illustration of the above assertion he cited the case of a child eleven years of age who came into his hands with her teeth filled with amalgam, cement, etc. He found upon examination twenty-two cavities, that had been previously filled, needing attention. The teeth of the child were extremely sensitive, the previous operator claiming that the teeth were too soft for gold, and as a result caries was rampant, and the teeth were in a worse condition than if they had not been filled at all. The writer said he followed his rule with this case, having to use cataphoresis to relieve the sensitiveness; adding that he would have resorted to general anesthesia to put in gold fillings before he would have placed amalgam fillings back in that mouth. He filled all the teeth with gold, and to-day,—five years after,—the mouth is in perfect condition.

In conclusion the essayist said he believed if we had the courage to attempt these operations, and if the proper rules were followed, it was excellent dentistry to fill children's teeth with gold.

#### *Discussion.*

Dr. RHEIN, New York, said that it was rather a radical departure from the course pursued by the majority of operators, but at the same time the arguments advanced were difficult to controvert. He said he thought the essayist struck the keynote of many failures when he said they arose from the desire of the operator to save time and patience, and to resort to what might be called a diplomatic form of practice regarding the patient's wishes irrespective of the saving of the teeth. That portion of the paper was unquestionably commendable, and it seemed to him the point of merit in the paper lay exclusively in this direction. He said it was a crying shame against the American dentists that they were more and more neglecting to do the best they could in every case that came before them for treatment; they were falling into the habit of doing the work quickly to save time, and, unfortunately, not doing it in the best manner they could. He said he wanted to make a statement which would probably seem more radical than any statement made by the essayist, and that was that when children's teeth were filled imperfectly it did them more harm, he believed, than if they had been left alone, regardless of the argument some advanced that inferior work was better than no work at all. With regard to the essayist's statement that the initial operation can be done better than any subsequent one, he did not think him so radical in that, but believed there are exceptions to all rules.

Dr. Rhein continued: "As I listened to the paper my mind was impressed with the one thought of thoroughness in our operations, and in this point I would highly indorse the paper. For my own part I believe that amalgam will save teeth, and there is no reason why it should not, at this period of life, if properly introduced."

Dr. JAMES TRUMAN said that the subject of filling children's teeth was one that had been threshed over and over for the past



forty years and was no nearer solution than ever. He said that during his fifty years' experience as a dentist he had rarely ever listened to so radical a paper, and one so opposed to his own views, as the one just read. He said that some of the statements made in the paper were contrary to his experience, and they were also contrary to the doctrine of Dr. Black. The essayist said there was no difference in hard and soft teeth; that they were all exactly the same. Dr. Truman said: "Now, I do not believe that. My experience in practice has not in any way convinced me of this. The essayist assumes that he can pack gold in children's teeth irrespective of these conditions. If he has had any success with this kind of practice, it is more than I have ever been able to accomplish. He assumes that he can place this gold in children's teeth without taking into consideration the character of the teeth, without regard to the so-called soft teeth. In the filling of children's teeth we have to take into consideration the irritation that may be caused by putting in gold, and also the irritation from thermal changes, as we know that gold is one of the best conductors. Contrary to what the essayist says, I have frequently had children who wanted me to place gold in what he terms so-called soft teeth, and I was afraid to do it, as my experience had taught me that it is a dangerous thing to do. I think the doctrines taught by this paper are very injurious. We should be more conservative in our teachings along these lines, and I cannot help but believe that the essayist knows better than the method he advocates."

Dr. KINGSLEY said he could not help but admire the paper, because Dr. Ottolengui was a master at anything he attempted, and his arguments were always convincing; and he was glad Dr. Truman had said he believed the writer knew better than to practice what he was advocating. He said Dr. Ottolengui was the happy possessor of the forgetting faculty when he was trying to make a certain point, for he knew several patients,—children, ten, twelve and fourteen years of age,—in whose mouths Dr. Ottolengui had placed amalgam fillings.

Dr. HART, of New York, said he did not see, by carefully considering points brought out in the paper, that the writer's arguments were any more convincing in favor of gold than they were for amalgam. He believed that if the cavity were rightly prepared, and amalgam placed in it properly, it would preserve a tooth. He said also that it is frequently the case that we do not care to place a child in an unfavorable mental attitude toward dentistry by subjecting it to long operations, and under these circumstances plastics could be used to advantage until the patient was in better condition to endure a permanent operation.

Dr. SANGER said that he thought the main object of the writer in presenting such a radically sounding paper was a plea against slovenliness in dentistry. Amalgam is a dangerous material for the young practitioner to handle, in that it has a tendency to make him grow careless, as it can be very easily manipulated and will look well for a certain length of time. He did not think the material used in filling a tooth had anything to do with the care in the preparation



of the cavity, as the essayist seemed to think. Just as much care should be used in preparing a tooth for an amalgam filling as for a gold filling. He was sure that all would agree that if a cavity be prepared with the greatest care, and the filling be placed in properly, the results will be highly satisfactory, regardless of the material used.

Dr. STOCKTON said that he was of the opinion that the essayist in advancing such a radical theory was simply putting out a feeler to see where the members stood, and he could not believe that Dr. Ottolengui meant all he said in the paper.

Dr. OTTOLENGUI. "Yes, I do."

Dr. STOCKTON. "So much the worse for you." Continuing, Dr. Stockton said he believed that amalgam was a very valuable material in the saving of children's teeth. He said he had frequently seen teeth where an amalgam filling had been placed and in the course of time the filling came out, but the tooth would not decay on account of the action of the amalgam on the structure. He said that you could not attempt to place a gold filling in a child's mouth without placing on the rubber dam, and in some instances this was practically impossible, as the teeth were so short, and gums so sensitive, that the operation would be so very painful that often you find children who would not submit to the operation. He said subjecting children to such operations would give them a horror of the dental chair, and the result of that impression would be more harmful, so far as the saving of the teeth was concerned, than to allow the teeth to stand awhile with a temporary filling in them. His experience taught him that the best results were obtained from filling the teeth of the children with a temporary filling and letting them remain until they were probably twenty years of age, and ready for a permanent operation.

Dr. OSMUN said he was very much interested in the paper, because in a measure it agreed with his experience for the past twenty-nine years. He cautioned the young men of the profession, however, not to accept the radical statements of the essayist entirely. He said he had found great differences in teeth, and that he was more fully convinced of this fact every day. He said, though, that wherever it was possible to use gold, and the environments warranted it, one would always get better results from its use than from any other material. He, however, believed that there were many cases where gold should not be used, and that this paper was only a plea for conservatism in practice.

Dr. OTTOLENGUI, in closing the discussion, said he had been misunderstood as having said that there was no difference between hard and soft teeth. He did not say that. He said there was no difference between hard and soft teeth in their relation to a gold filling. He claimed there was no difference in the constituents of the hard and soft teeth, and that soft teeth were simply more friable than the hard ones. He said there was another difference, and that was that soft teeth decayed more rapidly than hard ones, and he should therefore modify his statement by saying the difference was that the soft teeth needed gold about ten times as much as the

hard teeth. "Dr. Rhein says if the cavity is prepared properly, in initial cavities, and amalgam placed in them, it will save the teeth. Now, I claim that I can place gold in initial cavities just as easily as I can amalgam, and it is a permanent operation, and I claim that gold is demanded."

In closing, he asked the members to try this method of practice, and he would assure them that they would find it more satisfactory than temporary work.

On motion the subject was passed, and the convention adjourned until 8.30 P.M.

### THIRD DAY—*Evening Session.*

Meeting called to order at 8.30 by the president.

Dr. STOCKTON moved that a vote of thanks be extended to Dr. Slade for his work on the committee for the Enforcement of the Dental Law.

Motion carried.

Drs. Meeker and Stockton were appointed as a committee to act with other committees from the different state societies in exerting their influence on the trustees of the Carnegie National Institute to assist the profession by establishing a department for original research along dental lines.

Dr. MEEKER. At our last meeting a resolution was offered relative to non-resident members being allowed to associate themselves with the society, without the privilege of voting. This resolution was laid on the table to be acted upon this year. I move that it be taken from the table, and adopted.

Motion carried.

On motion of Dr. Stockton, Dr. R. Ottolengui, of New York, was elected an honorary member of the society.

Dr. Osmun was called on for a report from the Examining Board.

Dr. OSMUN in his report said that during the year there had been fifty-three new applicants for license, but it was impossible to report how many were successful, as the examination of their papers had not been finished.

Dr. Osmun also called attention in his report to the fact that some of the members of the profession had been very careless in complying with the law requiring every licensed member of the profession in the state to register with the board annually. He said every effort had been made to get all licensed practitioners to comply with the law, but as yet there were about twenty-five who had not done so. He called attention to the fact that those who did not comply with this law were liable to arrest and fine, for not complying with the law.

Dr. JOKICHI TAKAMINE, of Tokyo, Japan, then read a very interesting paper on

### A NEW HEMOSTATIC.

Dr. Takamine gave a very interesting description of the manner of making adrenalin from the suprarenal gland. He said he

thought the discovery of the value of the active principle of the suprarenal gland would be of very great value to the profession, in that it opened up practically a new field of work. In the past the majority of medical preparations,—in fact, nearly all of them,—were from mineral and vegetable origin. He thought the isolation of the active principle of this gland, and its use in the medical world, would lead to the discovery of the fact that other organs may be so treated that their active principle may be isolated and adapted to the cure of many diseases. He said that adrenalin, as so far used by the dentist, was of the greatest value as a hemostatic. As such, he said, it had been shown to be the most powerful ever yet discovered, and that it would prove of great value to the dentist.

### *Discussion.*

Dr. HEAD, in discussing Dr. Takamine's paper, said it was a subject which had interested him very much in that it opened up possibilities for future work in this line. He said it would doubtless be a great help to both professions if the active principles of other organs of the body could be isolated and applied to the treatment of different diseases. In speaking of adrenalin, he said he did not think it should be used where healing by first intention was desired, as he thought possibly it retarded the healing of a wound, and illustrated this by giving an experience of his own where he cut his face while shaving, and made an application of adrenalin. He said it stopped the hemorrhage immediately, but the wound was several days healing, secondary hemorrhage having occurred, and it was of such a nature that ordinarily it would have healed in a few hours. He said he considered that this new hemostatic was very fine for stopping hemorrhage, but thought that where healing by first intention was desired, some other remedy should be used.

Dr. TAKAMINE, in closing the discussion, said he had had extensive experience in the use of this as a hemostatic and had had no trouble from secondary hemorrhage, but he had several reports of cases where it had occurred. He said this, however, did not necessarily mean that the agent used was favorable to secondary hemorrhage. He thought it was accounted for in some instances by the fact that the hemorrhage was so readily stopped that it misled the physicians, and they applied it too freely. He said it was fortunate for Dr. Head that he had but one cut to experiment with, but it would have been fortunate for the drug if he could have had two cuts just alike on both sides, and to have tried two different remedies and seen if secondary hemorrhage would have occurred in both instances, or if healing by first intention would have occurred in one instance and not in the other.

After the discussion of Dr. Takamine's paper, a motion was made to adjourn until 10 o'clock Friday morning. Motion carried.

### *FOURTH DAY—Morning Session.*

The Friday morning session was devoted to the election of officers for the coming year.



Officers elected: F. S. Hindle, New Brunswick, president; H. S. Sutphen, Newark, vice-president; C. A. Meeker, Newark, secretary; H. A. Hull, New Brunswick, treasurer.

Dr. B. F. Luckey, of Paterson, was elected to the State Board of Examiners to fill the vacancy caused by the expiration of the term of Dr. G. E. Adams.

Drs. A. Irwin, Camden, W. G. Chase, Princeton, F. E. Riley, Newark, and W. W. Hawke, Flemington, were elected members of the Executive Committee for the coming year.

Drs. J. E. Duffield, Camden, T. S. Dunning, Paterson, T. H. Dawes, Somerville, and Chas. H. Dilts, Trenton, were elected to the Membership Committee for the coming year.

Adjourned.

---

## FOREIGN RELATIONS COMMITTEE, NATIONAL ASSOCIATION OF DENTAL FACULTIES.

### FOREIGN DENTAL EDUCATION EQUIVALENTS IN AMERICAN DENTAL COLLEGES.

ON behalf of the Foreign Relations Committee of the National Association of Dental Faculties, I desire as secretary to the committee to give a brief answer to the criticisms by the editor of the COSMOS on the work of the committee, which are found in an editorial in the September issue, entitled "Recent Legislation and the D.D.S. Degree." Dr. Kirk is himself at present a member of the Foreign Relations Committee, but his appointment is a recent one, so that he is only conversant with the late work of the committee, and finds fault through ignorance.

He says (page 978) that "The published records of the Faculties Association fail to show that that body has ever had presented for its consideration and enlightenment any detailed exhibit of the conditions, regulations, and requirements affecting the education and licensing of dental practitioners in the several countries of Europe."

In making the above statement Dr. Kirk is only half right; *i.e.* the published records of the Association *do* fail to show upon what the committee founded its judgment of "equivalents," but the fact remains that the committee did have concise and voluminous exhibits of all, or nearly all, of the foreign dental educational institutions before deciding upon equivalents of students coming from those institutions and seeking advanced standing in the dental colleges of America. It is unfortunate that Dr. Kirk did not have this information before he made an unjust attack upon the Foreign Relations Committee. This information, which was from American consuls and representatives in foreign countries, governmental officers, the colleges themselves, with sworn transcripts of system and curricula: prominent resident dentists, who gave both favorable and unfavorable comment, etc.,—giving a mass of evi-

dence which was carefully digested by the committee and upon which their judgment of equivalents was based. This information was not published in the proceedings on account of its bulk, which made publication out of the question, but was briefly epitomized orally by the chairman of the committee, Dr. Barrett, to the Association at the meeting at Old Point Comfort in 1897, and in annual printed reports of the committee. Dr. Kirk should have found by inquiry whether his premises were correct ones before he essayed to criticize the work of a committee that has done an enormous amount of work at a great personal sacrifice of time and money, and which is, we think, quite generally appreciated by the profession, before he impugned the motives of members of that committee and accused them of making "American dental education ridiculous in the eyes of the world."

The Foreign Relations Committee may have erred; possibly the equivalents given are not sufficient, but the committee must not be accused of giving the education in our American colleges "an inflated basis" through "false premises" by the editor of the COSMOS or anyone else without knowing upon what information the committee acted. It is the COSMOS editor who is acting under "false premises" in his criticisms and who is injuring the beneficent result conscientiously sought by the Foreign Relations Committee.

The committee has ever been on the alert to modify its recommendations respecting equivalents as soon as definite information respecting the added work of foreign schools is at hand, and the resolution offered by Dr. Kirk and adopted at the late meeting at Niagara which he thinks averted "calamitous results" is only defining the purpose which the committee has had in view ever since its organization. This will be carried out in the future as in the past, and the committee will endeavor to do entire justice to foreign students who come to American schools, and will carefully weigh the arguments of representatives of American schools seeking credits for foreign students which the committee at present deem unwise and unjust.

In this communication it is not my province or purpose to argue the broad question of the relative value of foreign and American dental education, which naturally comes to the mind, but simply and only to correct the uninformed statement made by the editor of the COSMOS that the Foreign Relations Committee acted without information in arriving at equivalents. Such information since 1897 has been in the committee's hands, and was secured with much correspondence and pains, largely by the untiring labor of the chairman, Dr. W. C. Barrett.

J. D. PATTERSON.

*Sec'y Foreign Relations Committee.*

## EDITORIAL.

# REPLY TO THE SECRETARY OF THE COMMITTEE ON FOREIGN RELATIONS OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

WE publish elsewhere in this issue a critique by the secretary of the Foreign Relations Committee upon our September editorial wherein we took exception to the recommendations of said committee regarding the admission of foreign postgraduates to advanced standing in American dental colleges.

The secretary of the Foreign Relations Committee quotes the following paragraph from the editorial in question and makes it the central feature of his criticism: "The published records of the Faculties Association fail to show that that body has had presented for its consideration and enlightenment any detailed exhibit of the conditions, regulations, and requirements affecting the education and licensing of dental practitioners in the several countries of Europe." And the secretary of the Foreign Relations Committee asserts that we are "only half right" in the foregoing statement. We think his measurement a trifle short, for two reasons,—three, in fact:

First, because before publishing the statement criticized we carefully examined the published reports and failed to find any record of such an exhibit having been made to the Faculties Association.

Second, because before publishing the statement we communicated with the secretary of the Faculties Association, asking if such an exhibit had been made, and he replied that it had not.

Third, because Dr. Patterson himself, states, see his critique (page 1191 of this issue), "This information was not published in the proceedings on account of its bulk, . . . but was briefly epitomized orally by the chairman of the committee, Dr. Barrett, to the Association at the meeting at Old Point Comfort in 1897, and in annual printed reports of the committee."

It appears, therefore, notwithstanding the voluminous collection of documentary matter gathered at great expense of time, labor, and money, that the digestion of the data by the Committee on Foreign Relations resolved itself into a recommendation uniformly arbitrary for all recognized foreign schools without exception, and that, notwithstanding the intricate and extensive educational interests involved, the Faculties Association was asked to legitimize this straight-cut ruling after the whole matter had been "briefly



*epitomized orally*" by the chairman of the committee, Dr. Barrett. Unless we misinterpret the foregoing evidence we are officially informed thereby that the Foreign Relations Committee was very fully equipped with reliable data upon which to frame its report, and the National Association of Dental Faculties were without any information upon which to base an action excepting that "briefly epitomized orally" by the chairman of the committee.

We hold, first, that the committee erred in its finding when after carefully digesting all the evidence they fixed the standard of equivalency of graduates of all recognized foreign dental schools at the standard of attainment reached at the end of a freshman year in an American dental school. The committee should have known that there is as great a variation in the quality of the educational output from foreign dental schools as there is in that from American dental schools,—greater, in fact, in view of the standardizing effect which the work of the Faculties Association has had upon dental education in America. Therefore the adjustment of the principle of equivalency in the matter of admitting foreign post-graduates to advanced standing in American schools should have been upon a sliding scale of individual educational attainment, for otherwise, by the rule recommended by the committee, the scale is arbitrary, inequitable, and practically ignores the element of equivalency altogether.

Dr. Patterson is in error when he charges that we have "impugned the motives of the members of the Committee on Foreign Relations." We distinctly disavowed any such intention in the September editorial in the following words: "We have endeavored to deal strictly with the recorded facts without discussing or imputing motives." We here reiterate that statement as indicative of our purpose; but with the best motives on both sides it is quite possible to err in fact, and that we contend the Foreign Relations Committee has signally done.

Dr. Patterson states in closing his communication that his purpose is "simply and only to correct the uninformed statement made by the editor of the Cosmos that the Foreign Relations Committee acted without information in arriving at equivalents." In reply to which we beg to say that the editor of the COSMOS made no such assertion as the secretary of the Foreign Relations Committee has attributed to him. We did "assume" that no critical detailed comparison of equivalents had been made, because the resulting recommendations of the committee would seem to indicate that they had not done so. Now we are informed that they did make a careful critical study of the data, but in spite of the fact, which anyone

at all conversant with the subject already knows, that there is the greatest possible variation in the extent and content of curricula among European dental schools, the Foreign Relations Committee nevertheless recommends that practically all foreign graduates be graded to a uniform standard equivalent to the first year's work of an American dental school.

Dr. Patterson refers to the resolution by which the report of the Foreign Relations Committee was amended, and which places the reception of foreign students upon the basis of individual attainment instead of upon an arbitrary basis equivalent to one year of education in an American dental college, and claims that said resolution "is only defining the purpose which the committee has had in view ever since its organization." Very well, admitting that to be the case, why then should the committee, because it has not yet apparently been convinced that dental education is not an American monopoly, make *ad interim* a ruling which in effect is unjust and arbitrary until some future time when they may be in possession of more definite light on the question.

We applaud the earnest work of the committee; we know something of how much labor, effort, and expense has been utilized in the collection of its data; but that is not the present contention. What we have criticized and what we are absolutely and unalterably opposed to in principle is the arbitrary ruling of the committee as set forth in the editorial in this journal for September, and which we still believe, regardless of motives, would in effect make us ridiculous in the eyes of the world by placing American dental education upon an inflated basis.

---

### PLASTER OF PARIS.

OF all of the materials which the development of dental practice has called into requisition it is probably safe to assert that none has filled so important a place as plaster of Paris. Ample scope is furnished to the speculative mind in the endeavor to realize the tremendous extent to which dental art is built upon a foundation involving the use of this indispensable material. Doubtless other methods would have been devised to accomplish similar ends had plaster never been discovered, yet so intimately is its use bound up in the majority of our procedures that the dentistry of to-day would have been unknown and the whole practice of our art would have been fundamentally different in the absence of this material. Dental

and oral prosthesis, orthodontia, and much of purely operative dentistry would have been restricted in their growth, and many ordinary operations would have been impossible, had we been deprived of the useful aid of plaster of Paris.

So familiar are its qualities, and so accustomed are we to the feeling and belief that we know all about it, that the suggestion that much is yet to be learned about it may seem somewhat overdrawn; nevertheless we are convinced that there is a large field for investigation in connection with this material, not merely as an interesting subject of research, but because certain data with regard to its physical characteristics and behavior are urgently needed, and indeed must become matter of common knowledge before precise and accurate work can be uniformly accomplished with it.

The general use of plaster as an impression material and its universal use in the making of casts of the jaws upon which to construct artificial dentures have brought out the fact that the material is subject to great variations in form and in texture during and after the process of setting, and that these variations exert a strong modifying influence upon the adaptation of the dental mechanism which has been constructed upon it in so far as perfection of fit is concerned. Its expansion, its warpage, and its varying density are all factors which must be severally reckoned with if the finished mechanism made upon it is to be accurately adapted and comfortably fitted to the mouth for which it was intended.

We know in general certain things about the behavior of plaster, and we have certain general notions as to the causes of its varying qualities, and something as to the methods of controlling these variations. We know, for example, that there is hard and soft plaster, fine and coarse, quick-setting and slow-setting; that the setting may be hastened by the addition of potassium sulfate or common salt, and that alum increases the hardness of the casting. We know also that plaster expands in setting, that the rate of expansion is different for different grades, and that the rate is modified by the temperature of the water used in the mixing and by the degree of temperature at which the crude gypsum was dehydrated. These data are, however, little more than generalities, and are therefore merely indications of what should be more precisely worked out and recorded. The work already done in a scientific way in connection with this subject has been meager, but, little as it has been, it is extremely valuable, for the reason that each item of definite information brought out with regard to this material is another practical step toward precise, accurate work in dental prosthesis.



Our attention has been recently directed to this subject because of recent discussions as to the causes of ill-fitting dentures, particularly in upper cases of the Gothic or high palatal arch variety, where it is asserted that notwithstanding the utmost carefulness in every detail of the work, from the taking of the impression to the finished denture, the fit has been unsatisfactory and the piece lacking in the adaptation necessary to obtain good atmospheric adhesion.

The late Dr. W. Bowman Macleod, of Edinburgh, called attention\* to a peculiarity of plaster in setting not previously noted, and one which has an important bearing upon the fit of plates in high palatal vaults. He found by experiment that a casting of plaster two feet square upon a plane surface not only showed a considerable expansion, but a warpage indicated by an elevation of the center of the casting one-half of an inch above the plane surface upon which it had been cast. His further studies of this property showed that the same warpage occurred when the plaster was allowed to set in impression trays, and that the total elevation of the plaster surface above the palatal area of the tray with which it had originally been in contact was quite sufficient to cause a failure of adhesion in a denture constructed upon a cast made from such an impression. He discovered a practical remedy for both the expansion and the warpage of plaster by using, instead of plain water for mixing it, a solution of three or four ounces of potash alum in one gallon of water. The plaster so mixed was found to set "dead" and without change of form.

The practicality of a careful investigation of the plaster-of-Paris question will, we think, be generally conceded, and its usefulness would be beyond computation if skillfully and thoroughly done. The repetition and rediscovery of already well-known data are not needed. Everybody knows that plaster expands, but what is not known is what are the conditions which modify this property, and to what extent is it a factor in the various grades of plaster. Our knowledge of plaster should be an intimate knowledge based upon careful scientific research, not the empirical knowledge of the kitchen which is too often that of the prosthetic laboratory. And we would suggest that some of the same energy which is now being expended upon the search for the ideal filling be shunted on to the plaster-of-Paris question, which, though it may not promise such robust commercial returns, would yet yield a goodly harvest of benefit to humanity and honor to the investigator.

---

\**British Journal of Dental Science*, vol. xxiii, p. 394.

BIBLIOGRAPHICAL.

---

A TEXT-BOOK OF SURGICAL PRINCIPLES AND SURGICAL DISEASES OF THE FACE, MOUTH, AND JAWS FOR DENTAL STUDENTS. By H. HORACE GRANT, A.M., M.D., Professor of Surgery and of Clinical Surgery in Hospital College of Medicine, and Professor of Oral Surgery in the Louisville College of Dentistry. Philadelphia and London: W. B. Saunders & Co., 1902. Price, cloth, \$2.50 net.

A book may be judged by one of two standards: First, upon its internal evidence as to the fidelity with which it fulfills its avowed purpose. Second, by comparison with other works of the same class. As to the fidelity with which it fulfills the requirements of the class to which it belongs, the author of the present work announces as its object the presentation "to the student of dentistry of a text-book that will succinctly explain the principles of dental surgery applicable to all operative procedures, and also to discuss such surgical lesions as are likely to require diagnosis and perhaps treatment by the dentist." The author states that he makes no claim to original thought and that no authorities are cited, as the aim of the book is to give the most facts in the least space compatible with intelligent instruction.

The work is embraced in 224 pages and a copious index, and the subjects are divided among twenty-nine chapters. The first eight chapters are devoted to surgical principles, inflammation, ulcerations and kindred pathological phenomena, gangrene, thrombosis and embolism, auto-infection, surgical fever, pyemia, sapremia, septicemia, erysipelas, actinomycosis; surgical diagnosis, preparations for operation, anesthesia local and general. Chapter X is devoted to wounds and shock. A chapter on emergencies follows, in which are included hydrophobia, epilepsy, apoplexy, sunstroke, foreign bodies in the eye, nose, ear, and air-passages, and burns. Chapter XII is devoted to hemorrhage. The three succeeding chapters embrace the subject of tumors. Chapter XVI treats of syphilis. Chapter XVII is devoted to tuberculosis of bones, skin, and mucous membranes. Chapter XVIII, to diseases of the bones and lymphatics. Chapter XIX, to ulcerations of the gums and mouth; XX, to tumors of the gums and alveolar border,

including diseases of the bones and jaw. Chapters XXI and XXII, to surgical lesions of the mouth and face; XXIII, to consideration of cleft-palate and harelip; XXIV, lesions of the lips and tongue; XXV, diseases of the salivary glands, salivary calculi and salivary fistula, and ranula. Chapter XXVI treats of diseases of the maxillary and other sinuses, cysts, polypi, and acromegaly. Chapter XXVII is devoted to neuralgia; XXVIII, to dislocations; and XXIX, to fractures.

Altogether, our impression from investigation of the book is that its teachings as far as they go are sound and trustworthy, but, considered as a book suitable to the needs of the dental practitioner, we consider it deficient in many important particulars and superfluous in a number of features. For example, nowhere in the book are we able to find any discussion of the accidents associated with that very common operation, the extraction of the teeth, and not even in the chapter on hemorrhage is any reference made to the technique of procedure for the arrest of post-operative hemorrhage in extraction cases. The whole surgical field comprises no operations which more immediately concern the dentist than those for the removal of impacted teeth or malposed teeth; these subjects are ignored entirely. Likewise the surgical aspects of difficult dentition are not even referred to. In fact, the operations which are most likely to come under the notice of the dentist are omitted, while a great many things which have no more relation to dentistry than they have to philanthropy are included. There is no evidence to show that the dentist is more likely to be called upon to treat a case of hydrophobia, epilepsy, apoplexy, or sunstroke, for example, than would any other individual, even a layman, in case of emergency.

We make this criticism not because such knowledge is not eminently useful to the dentist as well as anyone else, but it is not especially because he is a dentist that he should be called upon to know these things. We understand that the book is specifically intended for the instruction of dental students in things which it is needful for them to know as a part of their professional training, and why it is any more important for them to be able to diagnose lupus, keloid, or acute osteomyelitis of the tibia than it is for them to be able to diagnose diabetes or extra-uterine pregnancy we are unable to understand.

The book, in our judgment, needs to be rearranged, and not only its redundancies pruned off, but its deficiencies supplied, before it will be generally acceptable as a text-book of oral surgery



for dental students. The ideal oral surgery must be written from the standpoint of the surgical procedures which naturally fall within the province of the dentist to treat, and the subject must be presented from a dental point of view rather than from a medical one, in order to acceptably fulfill the requirements of a text-book for the instruction of dental students.

ANATOMY AND HISTOLOGY OF THE MOUTH AND TEETH. By I. NORMAN BROOMELL, D.D.S., Professor of Dental Anatomy, Dental Histology, and Prosthetic Technics in the Pennsylvania College of Dental Surgery, Philadelphia. Second Edition, revised and enlarged, with 337 illustrations. Philadelphia: P. Blakiston's Son & Co., 1902.

Upon the first appearance of this work four years ago we took occasion to review it at length, and in the course of that review criticized a number of points which to us seemed to need revision. We have carefully examined the second edition, and have nothing but commendation for the result. The text has been augmented by a number of valuable additions amounting to about 100 additional pages. The embryology of the teeth and the histology of the tissues of the mouth, as well as an additional chapter upon anomalies, give an added value to the present edition. The author has adopted the designation "alveolo-dental membrane" to take the place of the multiplicity of terms now in use for the designation of the membranous lining of the alveolus and covering of the radicular portion of the teeth. The use of cuspid and bicuspid is continued, which we regret to see, as these dental terms should be discarded in favor of the terms canine and premolar in common use by zoologists and all who have to do with scientific nomenclature in designating the teeth in question. The illustrations are unexcelled, and are made largely from original photographs by the author. The mechanical excellence of the work is worthy of high commendation, the paper and presswork being admirable. Taken as a whole, the book is one which should be in the hands of every dental student and teacher, as it fully covers the ground and especially fulfills the requirements of a text-book dealing with the subjects within its scope.

## OBITUARY.

## DR. JOHN A. HARRIS.

DIED, at Detroit, Mich., August 9, 1902, Dr. JOHN A. HARRIS.

John A. Harris was born May 27, 1833, at Preston, Conn. He came from old Colonial stock, and among his early ancestors on this side of the Atlantic were Walter Harris and Sir Robert Hempstead, on the paternal side, and on the maternal side Robert Williams, of Roxbury, Mass.,—all being Englishmen who settled in New England between 1630 and 1640. His father, John Hempstead Harris, was both farmer and merchant, and his boyhood was spent at home assisting his father. At the age of eighteen he went to New York, where he stayed for two years as a clerk in a retail store. Wishing, however, to fit himself for other work, he went to Norwich, Conn., and entered the office of Dr. Parkhurst, a leading dentist of that city, and began the study of the profession. He remained with Dr. Parkhurst for several years, but believing that the West offered more opportunities to a young man, he went to Michigan in the spring of 1855, taking with him a commission as agent for a then popular "History of the World." He canvassed vigorously for this work for six months, and then finding the opportunity for which he had been looking, he entered the dental office of Dr. Wm. Cahoon, one of the early dentists of Michigan, who was practicing at Pontiac.

In the spring of 1856 Dr. Harris purchased a dental outfit, and going to East Saginaw practiced his profession there and at Bay City until he was forced to leave that part of the state by repeated attacks of the malaria that was so prevalent during the early days of Michigan. He returned to Pontiac, and having effectually conquered the malaria, in the spring of 1857 he bought out Dr. Cahoon, who removed to Detroit.

June 3, 1857, Dr. Harris was married, at Detroit, to Miss Jane H. Cooper, formerly of Sterling, N. Y. Five children were born to them, of whom three are now living, Mrs. Thomas B. Bronson, of Lawrenceville, N. J., Miss Pauline Harris, of Pontiac, and Williams C. Harris, of Detroit, Mich. Mrs. Harris died at Pontiac, October 7, 1893.

From 1857 to 1901, continuously, Dr. Harris practiced his profession at Pontiac, obtaining an acquaintance and reputation that extended throughout Michigan. In Oakland county, particularly, he was known to almost the entire farming community, Pontiac being the county seat and for many years the terminus of the Detroit and Milwaukee Railroad. He was highly thought of, and his professional services were always sought after and much commended.

He was a member and officer of the First Methodist Episcopal Church of Pontiac from 1853 until his death. Initiated into the Masonic fraternity in 1864, he took all degrees up to and including the Commandery, serving officially in all the various bodies. In fact he was recorder and treasurer of the Council for thirty years continuously. He was also a member of the Maccabees, Royal Arcanum, and other fraternal societies. From early manhood he was by conviction a Republican. The only public office held by him was that of alderman, in 1867-8, when he was instrumental in securing some valuable and permanent municipal improvements in Pontiac.

His health began to fail in 1900, and he suffered several severe attacks of

an illness that forced him to give up business about the end of that year. Thereafter he made his home with his son in Detroit, where he passed away August 19, 1902, after a long and wasting sickness, the cause of his death being Addison's disease of the kidneys. His funeral was held in his old church at Pontiac, August 12, 1902, and his remains interred in Oak Hill cemetery, with Masonic honors, in the presence of a great number of his old friends.

GEO. L. FIELD.

---

### DR. HERBERT D. CURRIE.

DIED, September 15, 1902, at Cambridge, Mass., of gastro-enteritis, in his forty-sixth year, HERBERT D. CURRIE, D.D.S.

Dr. Currie was born at Reswick, York county, N. B., July 13, 1856. He was the son of Thomas G. and Patience Currie, the latter of whom survives him. In 1883 he entered upon the study of dentistry under the pupilage of his brother, Willard A. Currie, D.D.S., of Cambridge, Mass., at the same time matriculating at the Boston Dental College, from which institution he was graduated in 1885. He then moved to Fredericton, N. B., and there practiced his profession until 1892, when he came back to Cambridge, where he built up a splendid practice.

Dr. Currie, wherever residing, always won the esteem and respect of the community in which he lived, because of his genial character, honesty of purpose, and professional ability. He was a Fellow of the Boston Dental College, and a member of the Council of Dental Surgeons of New Brunswick.

He was married in 1891 to Miss Ella Boone, of Presque Isle, Me., who, with a son aged ten, survives him.

---

### RESOLUTIONS OF REGRET—DR. GEO. S. SEYMOUR.

At a meeting of the dentists of Louisville, held at the office of Dr. B. O. Doyle, Friday, September 26, 1902, the following resolutions were adopted:

"In the midst of life we are in death." The angel of death cometh at a time when no man can tell. Truly has he so come to summon our associate and co-laborer, Dr. Geo. S. Seymour. Mingling with us but a few hours ago, we are suddenly shocked by the announcement that he has gone from among us.

WHEREAS, While we bow in humble submission to the will of Him who doeth all things well, we desire to give expression to our sense of the loss our profession has sustained in the taking from our ranks of one who for many years has labored in this community, standing ever ready to maintain the honor and dignity he felt was so justly its due; therefore,

*Resolved*, That we, here assembled to honor his memory, do extend to his wife and family our earnest and most tender sympathy in this hour of their sad bereavement; and further

*Resolved*, That a copy of this preamble and resolutions be sent the family and furnished the dental journals and daily papers for publication.

CHAS. E. DUNN,  
C. G. EDWARDS,  
J. H. BALDWIN, *Committee*.



## REVIEW OF CURRENT DENTAL LITERATURE.

---

[*The Dental Era*, St. Louis, September, 1902.]

### A METHOD OF REMOVING CEMENTED-IN CROWN-PINS BY CHEMICAL MEANS. BY T. L. PEPPERLING, D.D.S., ST. LOUIS, MO.

The author recommends the following method for removing crown-pins which have been firmly cemented into a root, without enlarging the root-canals and without any danger of cutting through the side of the root, as may happen when removing the cement with a bur.

Apply the rubber dam to the root, using a piece large enough to well cover the nose, so as to prevent the patient's inhaling the irritating fumes. Wrap a wisp of cotton about a broach, saturate it with ammonia water, and apply it to the cement. As soon as the cement becomes soft, remove it with a sharp-pointed instrument. An old stiff broach or a root-canal explorer has been found very useful for this purpose. The operation of dissolving the cement should be continued and all softened particles removed until the pin is well exposed, when it should be extracted with a pair of pliers. The length of the operation depends upon the solubility of the cement in ammonia water, usually from one to two hours' time being required.

[*The Dental Era*, St. Louis, September, 1902.]

### HYPNOTISM IN DENTISTRY. BY B. F. MICHAEL, POND CREEK, OKLAHOMA.

The author has had opportunities to perform operations on patients under hypnotic influence and reports in this paper the result of his observations. He quotes Dr. Walter Neall's classification of man's controlling ability, which is as follows:

Class 1: Simple suggestion, *i.e.* without the aid of will force or influence, mere intimation and action being employed.

Class 2: Collective suggestion, wherein the combined wills of a number of individuals influence the will power of a single one.

Class 3: Hypnotic suggestion, in which a person is influenced and controlled by the exertion of another's will power without being placed in an hypnotic sleep.

Class 4: True hypnotism, in which the subject comes wholly under the control of the operator. In this class the subject has passed into what is known as hypnotic sleep.

The author gives interesting examples of dental operations performed with patients under different degrees of mental suggestion, and states that the dentist need not be an expert hypnotist, but his mental force should be calculated so as to influence, soothe, direct, and in a manner control his patients; he must have full possession of the necessary amount of will force. The moment the patient takes the chair the influence of the dentist's governing power must be exerted; he must be master of the situation, overcoming resistance and securing passiveness.

With regard to the line of study for the dentist in connection with hypnotic suggestion, Dr. Michael says that it should consist in the cultivation of a firm, clear gaze of the eye: an authoritative, positive way of expressing oneself; a determination to overcome resistance; a steady grasp upon one's temper; certain passes of the hand, which in some cases are indispensable, and the gaining of the patient's full confidence.

[*Archives de Stomatologie*, Paris, August, 1902.]

## THE USE OF ETHYL CHLORID AS A GENERAL ANESTHETIC.

BY DR. R. NOGUÉ, DENTIST OF THE HOSPITALS OF PARIS.

The author says that since the properties of ethyl chlorid as a general anesthetic were accidentally discovered by Carlson, in 1895, in the course of an application of this agent for the purpose of obtaining local analgesia, considerable progress has been accomplished in the technique of administration of this anesthetic. Dr. Thiesing, after experimenting upon animals, was the first to use it systematically upon man in connection with dental operations. Dr. Derocque uses it in his surgical clinics in Rouen. Messrs. Lepage and LeLorier have used it in connection with obstetrics. Dr. Guinard employs it preparatory to the administration of chloroform.

Dr. Nogué quotes the investigations of Wood and Cerna, Ruess of Basel, and those of Koenig, Malherbe, and Roubinovitch as follows: In rabbits, dogs, and monkeys there occurs a diminution in the arterial pressure which persists during the anesthesia, and disappears immediately upon the appearance of consciousness. This arterial depression is accounted for by a stimulation of the pneumogastric. It is a stimulation of central origin, as it disappears when the pneumogastric nerve is sectioned. In the monkey the respiration is quiet and regular, while in rabbits the excito-motor phenomena are very marked. Rhythmical convulsions, strong movements of deglutition, nystagmus, exophthalmia, salivation, and acceleration of the respiratory movements have been observed. The rapidity with which the anesthesia sets in depends on the degree of dilution of the ethyl chlorid with air. The mixture of one part of this agent with ten parts of air brings about anesthesia in from six to seven minutes. Mixed in equal parts, the anesthesia is complete in a few seconds.

Malherbe and Stepinski experimented upon dogs of from one to three years and of a weight varying from eight to sixteen pounds, the result of their investigations being as follows: In the first series of experiments sixteen anesthetics were performed with ethyl chlorid alone. Complete anesthesia was obtained in from twenty-five seconds to one and one-half minutes, the dose of ethyl chlorid necessary to bring about these results varying from 6 to 7 grams. Five times, doses of 15, 20, 25, and 30 grams were administered without provoking any serious accidents during or after the anesthesia. In these cases slight muscular contraction was noticed at the beginning; in three cases some salivation occurred, but never was there any trismus or cyanosis. In two dogs that had inhaled 25 and 30 grams of ethyl chlorid respectively, emission of urine and fecal matter occurred during anesthesia. The after-effects of the anesthesia were good, and in five dogs only was the return of consciousness accompanied by slight vertigo and titubation. In two other series of experiments, in which equal parts of ethyl chlorid and air and ethyl bromid and air were administered to dogs, violent contractions, persistent trismus, salivation, vomiting and cyanosis were observed, also titubation which lasted for one-half hour after the return of consciousness. In the case of ethyl bromid, administered as in the previous case mixed with equal parts of air, muscular contraction, very violent trismus, salivation, cyanosis, and vomiting were observed. In one case the administration of 34 grams proved fatal. After the anesthesia the dogs had vertigo and titubation; in three cases emission of urine was observed; the pulse-rate also decreased markedly.

From 170 cases of anesthesia, of which 140 were brought about with pure ethyl chlorid, Dr. Malherbe draws the following conclusions: From 2 to 4 grams of ethyl chlorid are generally sufficient to bring about anesthesia in man. The anesthesia comes on in from twenty-five to forty seconds. It is characterized by a quiet sleep, accompanied by slight snoring, and there is

never any sign of cyanosis. Some patients show at first a slight degree of excitement, but the majority are as a rule very quiet. He has never observed the phenomena of trismus, and only in a few cases of children was emission of urine observed. Vomiting does not follow the use of pure ethyl chlorid, and where it is administered in combination with chloroform vomiting occurred in only a few cases, and then it was neither frequent nor abundant. The return to consciousness occurs after three or four minutes; the patients are then able to stand up and walk without the slightest danger of syncope.

Dr. Louis LeGargam reports his observations on seventy-seven cases, in eleven of which the administration of ethyl chlorid was followed by chloroform. In a majority of these cases he had to administer 10, 15, and sometimes 27 cc. of ethyl chlorid in order to obtain complete anesthesia, which was brought about in fifteen, thirty, and sixty seconds, but in other cases it required from five to six minutes, the average time required being from two to three minutes. This investigator has often observed at the beginning of administration a period of excitement characterized by unconscious movements of defense, muscular tension disappearing generally after a few seconds, but sometimes persisting until the end of the administration. In a majority of cases this author observed a trismus similar to that produced by the administration of ethyl bromid, hence the necessity of keeping the mouth open by means of a prop to prevent the occurrence of this annoying circumstance. In operations in the buccal and pharyngeal cavity the trismus disappears almost always in cases of prolonged narcosis. Cyanosis and salivation were also observed in a few cases, and vomiting occurred after the return to consciousness in forty per cent. of the cases. According to Dr. LeGargam, the anesthesia does not last more than a minute, and in this respect his experience differs materially from Dr. Malherbe's. He states that he has had to administer from 40 to 50 cc. for operations of relatively short duration. He further states that in three cases alarming symptoms took place.

Dr. Nogué remarks that in a large majority of the cases reported by LeGargam the anesthesia was made to last from ten to fifteen minutes, and that there is nothing surprising that the symptoms observed should differ so widely from those noted by Malherbe, who employs ethyl chlorid in operations of very short duration and in doses of from 2 to 4 grams. According to Dr. Louis Turcan, insensibility is almost always complete one-half minute after the inhalation. He says that complete muscular relaxation is not always present, and that in complete anesthesia the sleep is of a quiet character, and the respiration normal. He has never observed trismus, salivation, spasm of the glottis, or involuntary contractions. The return to consciousness occurs immediately after the mask is removed and is always complete, especially in cases in which the administration of the anesthetic has been prolonged by means of several doses, when it is accompanied by nausea, tendency to syncope, and vomiting.

The author then recommends Dr. Malherbe's technique of administration, which consists in the use of a small compress, folded four times; this is placed upon the palm of the hand in such a way as to form a concave surface, when the sprays from two tubes of ethyl chlorid should be directed against it. From 2 to 4 grams is the average dose required. The patient should be placed in the dorsal decubitus, the compress applied against the mouth and nose, and the patient instructed to take deep inspirations. With the left hand the operator should support the head and the lower jaw. It is absolutely necessary that no air should be inspired. Complete anesthesia is characterized by muscular relaxation, by regular respiration, and by the sensation of cold evaporation in the right hand. Sometimes the face is slightly congested, the conjunctiva injected, the pupils slightly dilated, and the globes of the eye, while insensitive to the touch, respond to stimuli upon their upper portion. As soon as the muscular relaxation has been obtained,



the operation can be begun. If the operation is of long duration, in order to prevent return of consciousness two grams more of ethyl chlorid should be sprayed upon the compress and applied as in the previous administration. Even a third or fourth dose can be administered if the case requires it. By this method of intermittent administration every four to five minutes barely 15 grams of the liquid is administered, and the operator has ample time to carry out a considerable number of small operations, as the patients remain insensible during periods varying from five to twenty minutes; if, on the contrary, the operations to be performed are of long duration, as soon as the patient reaches the period of relaxation, instead of administering repeated doses of ethyl chlorid Dr. Malherbe begins the anesthesia with ethyl chlorid and continues it by means of chloroform administered in small doses and in combination with air.

Dr. Malherbe, as we can see from the previous description, employs smaller doses than Dr. LeGargam, and administers a maximum of 15 grams in several doses when it is necessary that the anesthesia should last from ten to fifteen minutes; while Dr. LeGargam employs doses varying from 50 to 30 cc.

The advantages of ethyl chlorid consist in the fact that the general condition of insensibility can be obtained with very small doses. In such doses it does not produce any of the symptoms brought about by chloroform or ether, but if in order to prolong the anesthesia high doses are administered, accidents similar to those observed in connection with chloroform and ether may occur, and then it loses its apparent advantage. This anesthetic is rapidly gaining ground in France, where it is given in small doses and exclusively for operations of small duration.

[*La Revue de Stomatologie*, Paris, August, 1902.]

#### FORCING OUT OF A TOOTH BY TRAUMATISM AND ITS RE- IMPLANTATION TWENTY-ONE HOURS AFTER THE ACCI- DENT. BY DR. BACQUES, LIMOGES, FRANCE.

The patient, a boy nine years of age, fell while playing with his brother, and as a result the lower right central incisor was completely forced out of its socket. Because of some attendant circumstances, due attention was not given to the case until twenty-one hours after the occurrence of the accident. Notwithstanding this, Dr. Bacques did not hesitate to perform the reimplantation of the tooth. The region around the alveolus from which the tooth had been forced out was edematous and painful, and the alveolus was full of food débris. After these food remnants were removed it was found that the labial wall of the alveolus had been fractured, the fracture being, however, a clean one free from splinters.

After giving a description of the probable mechanism by which the tooth was forced from its alveolus, Dr. Bacques states that thirty-five days after the implantation the tooth became perfectly consolidated, and that no inflammatory phenomena occurred during the lapse of time between the reimplantation and the consolidation of the tooth.

[*The Cincinnati Lancet Clinic*, October 11, 1902.]

#### PREVENTIVE DENTISTRY. BY C. M. WRIGHT, D.D.S., CINCINNATI.

There can be no question, the essayist says, as to the fact that dentistry is founded on hygiene, and that from the beginning dentists have been deeply interested theoretically in preventing as well as in curing disease.

From the beginning it has been proclaimed that clean teeth are far less liable to disease than are neglected ones, and yet, from some faulty habits, in practice rather than in theory, the dental profession has slighted a fundamental operation in the direction of prevention, and devoted itself to more

attractive and ingenious methods of cure and partial prevention. He refers to Dr. D. D. Smith, of Philadelphia, who has called the attention of the profession of America to this neglect, pointing out some of the important results of a thorough and frequent polishing by hand, with orange-wood and pumice, of all the exposed surfaces of the teeth. He has also forcefully advocated a method of practice which is strictly logical in its relation to real prevention. Dr. Wright suggested a few months ago a scheme for the forming of a sub-specialty in dentistry, urging the colleges to establish a special partial course for the training of cultured women in this one line, viz, the polishing of the teeth and the care of the mouth. This paper was favorably commented upon by the editor of the *International Dental Journal*, and since then the author has received a number of letters from dentists favoring these plans. He says that if on account of legal and other obstacles this plan cannot be carried out, then "we must perform these operations ourselves, if we are true to our convictions."

Dr. Wright's paper is a plea for prophylactic dentistry, and shows the necessity of impressing upon patients the importance of carefully cleaning and polishing the surfaces of each tooth in order to prevent the development of dental caries. Preventive dentistry, so called, would prevent diseases both dental and oral, but would increase enormously the demand on the dentist's time and services. This is why he has advocated the establishment of a class of sub-specialists. He offers two suggestions; the first to establish a special course in dental colleges for the teaching of prophylactic dental surgery as a specialty; the second, to individualize the teeth,—to learn to treat each tooth singly, and to consider the operation on each tooth as worthy of a fee.

He concludes his paper by stating that it can be proved by a study of past records of patients who have been treated from their childhood by the same dentist, that if the plan here suggested be pursued, the expense to them will be no greater and the results be infinitely more satisfactory.

[*The Dental Summary*, October, 1902.]

SOME FACTS AND CONCLUSIONS REGARDING EROSION. BY  
HARRY BARNES, M.D., CLEVELAND, OHIO.

Two distinct forms of erosion are recognized by this author: A systemic acid erosion or erosion caused by acids formed within the system, and an external acid erosion or erosion caused by acids taken into the mouth, notably the acids of the lemon, orange, and grape, as well as those acids taken in the form of medicine. Erosion, he says, is frequently accompanied by abrasion, and is often misnamed. For convenience, he calls this form abrasive erosion. The purpose of this essay is to consider certain facts respecting the peculiar manifestations of erosion as exhibited upon the surfaces of the teeth, with an explanation as to the causes thereof. Systemic erosion may be found upon the buccal and labial surfaces of the teeth, also the occlusal and incisal edges. It is rarely found on the lingual surfaces of the posterior teeth, but it is sometimes found upon the lingual surfaces of the upper front teeth. Its greatest destruction is seen at the angle of the jaws. He describes the case of a man aged forty, in whom some of the teeth had been the seat of erosion, while others were free from it. Regarding the reason why some of the teeth are diseased and others are not, incidentally the author brings forward a statement advanced by him some years ago, namely, that decay is most prevalent upon that side of the mouth on which the patient habitually rests the body during sleep, and says that this has a very important bearing upon the case, and offers the same reasons for the peculiar manifestations presented in erosion. He says that he does not expect everybody to agree with him now, but feels certain from long-continued investigation of cases that this is a fact, and so declares it. He quotes Dr. Michaels' investiga-

tions regarding the greatest destruction of tissue at the angles of the mouth, which he has found to be due to the acid secreted by the mucous glands found at this point.

Dr. Barnes says that the buccal fluids exuded by these glands sometimes are acid, and that destruction of teeth must naturally follow the contact of this fluid with the teeth. He says that the case he exhibited was from a gentleman who is a right-side sleeper, therefore all teeth affected are those which would be immersed in the fluids of the mouth at that time. The patient sleeping upon the right or the left side will place the head to the right or left of the line of the body or downward. The position upon the pillow will cause certain surfaces of the cheeks and lips to be drawn tightly against the opposite surfaces of the teeth, and certain other portions will be pushed from the inner surfaces, forming a pocket. Into this pocket will flow the oral fluids, which, if acid, become during the hours of sleep more and more vitiated, probably due to the growth of bacteria or their products. This pocket has its most dependent portion at the angles of the mouth, and this he believes to be the reason for the prevalence of the erosion on these surfaces. The erosion of the occlusal surfaces is caused by the teeth being held slightly apart during sleep, and by capillary attraction. Erosion appearing upon individual teeth is probably due to irregularities on the surface of the lips and cheeks, which hold the fluids against the teeth at the areas of tooth-surface so affected.

He then refers to his classification of external acid erosion, due to external causes, and summarizes the results of his investigations, as follows: Erosion is clearly the result of an acid, formed within or taken into the system, in which the teeth are bathed. The flow of the acid within the oral cavity is due to capillary attraction. The most destructive period of systemic erosion is during the hours of sleep, and the greatest destruction is found on that side of the mouth on which the patient habitually rests the body during sleep. External acids show their effects on such teeth as come in direct contact with the acid, and they are probably affected by systemic acid erosion as well. Abrasive erosion is due to acid erosion and a too vigorous use of the tooth-brush and powder.

[*L'Odontologie*, Paris, September 15, 1902.]

#### A CASE OF TUMOR OF THE DENTAL PULP WITHOUT CARIES OF THE TOOTH. BY DR. PONT, PARIS.

Dr. Pont has observed a very interesting case of tumor of the pulp, of which the following is a description. The patient, a man thirty-five years of age, in good health, consulted Dr. Pont regarding the cause of pain located in the upper right second molar. Dr. Pont examined this tooth carefully, but failed to discover any trace of caries. He refused to extract the tooth as was requested by the patient, and treated the case locally only. Three weeks afterward the patient returned stating that this local treatment had benefited him slightly for several days, but that the pain had returned and was then even worse than before, and insisted again upon having the tooth extracted. The tooth was again examined, and, as was the case with the previous examination, no sign of caries could be found, but against the light it showed a dark red color, different from that observed in the neighboring teeth. Dr. Pont opened the tooth, and as soon as the enamel had been drilled through, the instrument met with no further resistance, and the patient complained of slight pain. By means of a chisel the operator removed, almost without any effort, the entire masticating surface, when he ascertained that all the crown was occupied by the pulp, and that there was scarcely any dentin left, the enamel forming a sort of cap completely filled with the soft tissues of the pulp. The tumefied pulp was of a deep red



color, of soft consistence, and portions of it could be removed easily and without causing very severe pain. It was immediately extirpated without provoking any profuse hemorrhage.

The author then takes up the question of the diagnosis of this disturbance, stating that it could not have been a chronic or hypertrophic pulpitis, as the patient had not previously suffered any pain, and the examination with a magnifying-glass did not reveal any carious process. It might have been a case of aneurism of the artery of the pulp. This diagnosis would explain the deep red coloration of the pulp and the disappearance of the dentin, for, as is well known, aneurisms bring about the absorption of osseous tissue; but this could not have been the case, as the extirpation of the tumefied pulp was carried out without any apparent hemorrhage. It must then be admitted, the author says, that the case was one of primitive tumor of the pulp.

The tooth was treated antiseptically and the root-canal filled with the gutta-percha cone. The essayist did not deem it advisable to replace the lost crown with a pivot tooth, as he was not sure whether the tumor would not recur, and then it could be attributed to the presence of the pin within the root-canal.

Dr. Pont will make microscopic sections of the tissue removed, and will later on publish the result of his examination.

---

## PERISCOPE.

---

**Chloral Hydrate as a Vesicant.**—When a marked effect is rapidly required, chloral hydrate is better than cantharides and has none of its disadvantages. With children, next to iodine it is the counter-irritant of choice. The blister will produce erythema, vesication, or ulceration, as desired.—*Montreal Med. Journ.*

**Importance of Familiarity with Particular Anesthetic Used.**—Conservatism is not always very valuable in surgery, yet it is always advisable for the surgeon to stick to the anesthetic he has always used rather than try experiments with a new thing, and this because the anesthetist is more important than the anesthetic.—*Internat. Journ. of Surgery.*

**Ichthyol a Compound.**—H. Hirasawa, in a paper communicated to the Pharmaceutical Society of Japan, states that he has separated ichthyol into two compounds by means of a solvent, and describes the properties of each, proving that ichthyol is a mixture of two substances, one of which remains dissolved in the aqueous solution of the other.—*Chemist and Druggist.*

**Treatment of Opium Narcosis.**—First empty the stomach with stomach-tube to prevent further absorption; then give a cup of strong, hot coffee. The latter allays nausea and acts as a physiological antidote. Keep the patient aroused by walking and the application of water, and give atropin sulfate, gr.  $\frac{1}{30}$ , and strychnin sulfate, gr.  $\frac{1}{30}$ , hypodermically.—*Med. Times and Hosp. Gazette.*

**A Special Degree.**—When a man has done something that adds to the world's knowledge or comfort, there should be a degree made to fit the work performed. Let the old degrees stand, for they have their place and the world cannot dispense with them, but let them be lifted from the mire with which they are fast becoming smirched.—JAMES TRUMAN, *International Dental Journal.*

**Adhesive Plaster or Collodion versus Stitches in Mouth-Wound.**

When a wound is situated in a place in which constant motion is going on, such as the angles of the mouth, it is always best if possible to avoid using stitches, as they tear out easily under such circumstances. Adhesive plaster or collodion will generally prove to be the best means of approximating the severed parts.—*Internat. Journ. of Surgery.*

**Treatment of Thrush by a Sucking-bag.**—Take a tampon of aseptic cotton, impregnate it with powdered boric acid and a little saccharin, inclose in a silk or cambric sac, sterilize, and place in the infant's mouth. Under the influence of sucking, the boric acid slowly dissolves and so has a direct and continuous action on the *saccharomyces albicans*. If the fungus growth is extensive this treatment may be supplemented by buccal irrigations. A very prompt cure results.—*ESCHERICH, Le Nord Médical.*

**Origin of Dental Hygiene.**—The tooth-brush is not an invention of civilization; but like the toothpick, comb, and tweezers, arose independently in various localities. The African negro pays much more attention to keeping his teeth clean than does the average European. The Bafioté, of the Loango Coast, for example, rinse the mouth after each meal. The Patagonians of South America, besides the daily bath in which both sexes indulge, keep their teeth clean and white by chewing a sort of gum.—*CHARLES H. WARD, Dental Office and Laboratory.*

**New Silver Salts.**—The silver salts are highly prized as antiseptics. They act by precipitating protoplasm; their action, therefore, is limited by their own products, viz, silver-albumin. This newly formed compound is black and discolours the tissues, thus greatly restricting their very valuable use in dentistry. Of the new silver salts, Credé's citrate of silver, known as *itol*, and the lactate of silver, known as *actol*, have gained much prominence; they also stain the tissues, and have found little admiration in dentistry.—*HERMAN PRINZ, Dental Era.*

**Importance of Attending Dental Society Meetings.**—The dental profession is crowded with men who think they cannot possibly leave their offices for a few days to attend our annual gatherings. They plod along in the same old rut, unconscious of the great benefits to be derived from an exchange of thoughts and ideas, unmindful of the influences exerted by associational work. They pass through life using the same methods and with about as little knowledge as they possessed when they started to practice.—*W. J. TAYLOR, Pacific Dental Gazette.*

**Obtundent for Sensitive Dentin.**—The following formula is recommended by Dr. C. N. Peirce:

Cocain, gr. v;  
Carbolic acid, gr. xx;  
Chloroform, ℥ss;  
Muriatic acid, ℥x;  
Alcohol, ℥ij.

—*Dental Brief.*

**New Anesthetics.**—Goldschmidt has prepared a series of bodies of the type of methenyldiparaphenetidin, by condensing phenetidin with orthoformic ethyl-ester. He has also prepared the corresponding condensation product with ordinary alcohol. By this means he obtains a body which he calls *anesthesin*. It forms crystalline needles, melting at 209° C., easily soluble in water when hot, but not in cold water to any extent, and soluble in alcohol and the usual organic solvents. It is a powerful local anesthetic, and is not toxic in fair-sized doses up to 10 or 12 gm.—*Pharm. Zeit., 1902.*

**A Case of Lupus of the Face treated with Ichthyol-Sodium.**—The patient was a lady seventy-seven years old, who ten years ago was attacked with an idolent ulcer which appeared inside the nostril. Gradually the ulcer spread, until the whole of the nose, lips, chin, and cheeks were one mass of nodules and ulcers. For the first three years the patient was very weak and generally ailing; during the last seven years she has, but for occasional attacks of bronchitis, enjoyed fairly good health. The treatment which was followed in this case, and which resulted in so signal a recovery, consisted in the application of thirty per cent. ichthyol-sodium and castor-oil. By persevering with this treatment the area of ulceration was gradually reduced until the disease was confined to the nose, whence it had started; after several months even that locality became cured. There has been no recurrence.—*Treatment.*

**To Fix Points in Socket Handles.**—To fix an excavator, plugger, or other point in a socket handle, do not wrench it into place with pliers, there to rust beyond the possibility of removal without the application of heat and much force, permanently and often seriously marring the two pieces; but rather merely heat to the wax-melting degree the threaded end of the point, touch to a bit of the hard wax used in bridge-work, and after similarly heating the threaded end of the handle, insert the point in the socket, and with only the thumb and finger twist to place. This fixes the point in the handle, keeps it there, prevents ingress of water in cleansing, and therefore rust. To disengage the point for repair, replacement, or substitution, it is only necessary to apply heat at the threaded parts and unscrew the point, which is usually done with the thumb and fingers, although in rare instances a pair of pliers may be necessary.—*Dental Office and Laboratory.*

**Automatic Retractors of the Tongue.**—M. Laborde presented at the Académie de Médecine two models of automatic tractors of the tongue: one acts by a clock movement, the other is acted on by an electric motor; an accumulator enables the apparatus to work for six hours (*Gazette hebdomadaire*, June 29, 1902). On this occasion M. Laborde presented a case of M. Paul Delbet's, in which the patient, after suffering from a grave syncope from chloroform that had resisted all the classical means, was restored to life by means of rhythmic traction of the tongue. An interesting fact is that these tractions are of no power so long as they are made by holding only the extremity of the tongue. They become more active from the moment that the whole anterior part of the tongue is grasped. M. Laborde has insisted in all his preceding communications on the necessity of holding at least one-third of the anterior part of the tongue, otherwise no action is communicated to the larynx, and its nervous organs are not brought into play.

**Action of Demulcents.**—Dr. J. H. Tappeiner conducted a large number of experiments on animals and human beings to determine whether the group of drugs known as demulcents really possess the property of allaying irritation. A distinct diminished irritability of motor nerves by chemical salts was found in the presence of mucilaginous substances. The same can also be said of sensory nerves, since pain appeared later and was less intense than in control experiments. The mucous membranes of the eyes and of the intestines gave less evidence of inflammation when demulcents were added. On the other hand, the cathartic action of drugs is enhanced, since their irritation is prolonged, owing to slower absorption. It was also found that this absorption is less active in the stomach and the upper part of the intestines, and that this holds true for water also. All these experiments prove that the time-honored custom of using demulcents to allay inflammation and irritation is based upon scientific facts.—*Arch. Internat. de Pharmacodynam. et de Thér.*



**Honesty and Thoroughness versus Quackery and Advertising.**—We can safely say that, given the natural aptitude, a decent education, and a passable manner, any young man who takes up the dental profession with the desire to master it thoroughly and to maintain a high plane of professional conduct may laugh at the quack and the advertiser, feeling assured that he will perform some of the most useful offices a man can render to his fellow beings, that he can enjoy a sufficient income for his needs, and that his hours will allow him sufficient time for recreation.—*Brit. Journ. of Dental Science.*

**The Anesthetic Action of Methyl Chlorid.**—MM. Richet and Marcille (*La Semaine Médicale*, May, 1902) assert that the principal advantage of methyl chlorid over other anesthetics is that it is absolutely innocuous to cardiac function, whatever the dose administered. Unlike chloroform, which paralyzes the heart almost at the same time as the respiration, and sometimes even before it, methyl chlorid causes respiratory paralysis seven to eight minutes before cardiac syncope. Thus, enough of the drug to kill an animal by paralysis of the heart cannot be given, as respiratory stoppage prevents the intoxication extending to the myocardium. The drawback to its use is the absence of complete muscular relaxation, which is very difficult to obtain. Nevertheless, considering its complete harmlessness, methyl chlorid is worth trial by surgeons.—*Treatment.*

**Dionin.**—The employment of dionin in ophthalmic practice is a subject which demands considerable attention. Various papers have appeared during the past few months, which have generally united in its praise. Dr. Darier, in *La Clinique Ophthalmologique*, might perhaps be suspected of a partial judgment, but the work of Luniewski in *Die Heilkunde* and that of Dr. Bourdeaux cannot lie under the same accusation. There can be no doubt really of the value of dionin as an analgesic; no one can have used it, even in the most casual manner, without being struck by its enormous powers in this direction. Whether the good results in many ophthalmic diseases, varying from pannus to detached retina, which have followed its use are really consequences or coincidences may with more propriety be questioned. Until many more such experiences are recorded we must preserve an open mind and try, by adding our share, however small, to further the knowledge. We may be sure that at least we have gained a means of relieving pain that is second to none. Further, the drug is almost absolutely harmless. It is true that some authorities have spoken against its use in perforating wounds, either accidental or surgical, on account of the violent attacks of sneezing that may follow and would disturb the course of healing; but these paroxysms are not common. Apart from this it seems almost absolutely innocuous.—*Treatment.*

**Accidents during the Use of Chloroform.**—Laborde, at the Académie de Médecine, May 13, 1902, recalled, apropos of the recent discussion of chloroformization, the fact that the vapors of this drug are able, by their irritating action upon the terminal nervous network within the naso-pharyngeal mucous membrane, to determine a brusque arrest of the heart and respiration. This paralysis occurs, moreover, very easily if the patient be put under chloroform during a state of very great excitement. In order to prevent as far as possible this cause of death, which is always imminent as soon as one approaches the nose of a sick person with a compress soaked with chloroform, it is necessary to decrease the unnecessary excitement of the patient and the susceptibility of the terminal expansion of the fifth cranial nerve. The best means, according to the author, of accomplishing this purpose consists in giving a preliminary injection of morphin and atropin. Irrigation of the nasal mucous membrane and of the pharynx and glottis with a concentrated

solution of cocain is likewise of great benefit in suppressing the susceptibility of these regions. It is also necessary to have care to keep the tongue forward in the mouth with special forceps during the entire duration of the chloroformization, thus avoiding the sliding of the organ backward over the orifice of the glottis, thereby provoking asphyxia, and being ready to carry out rhythmical traction on this organ in case unfavorable symptoms arise.—*Medical News*.

**Javanese Method of Narcosis.**—L. Steiner describes in the *Arch. f. Schiff's- u. Trop.-Hygiene*, v, 12, a method of narcosis which has been long practiced in Java. The hands are placed on the neck of the subject, the fingers meeting at the back, and the carotid artery is briefly compressed with the thumbs, back of and a trifle below the lower jaw. The artery is pressed back toward the spine. Only five out of thirty subjects failed to respond to his application of this maneuver. The head falls back and the subject seems to be in a profound slumber, from which he awakes in a few minutes as if suddenly aroused. The effect cannot be due to suggestion, as the same maneuver avoiding the arteries fails to produce any effect. The procedure is called by a Javanese term which signifies "compression of the sleep-vessel." The popular name for the carotid artery in Russian, by the way, is also the "sleep artery," and "carotid" is derived from the Greek *karos*, sleep. He has never witnessed or heard of any accidents from this method of narcosis, which is widely practiced on the island, frequently associated with general massage. The patients do not vomit, and there is no incontinence of urine or feces. He opened an inguinal abscess in one case while the patient was unconscious. He is inclined to advocate this absolutely harmless method of narcosis as worthy of a place in surgery, on account of the rapidity with which it can be accomplished and the rapid awakening. The procedure may also prove effective in combating cephalalgia, vertigo, and insomnia.—*Journ. of A. M. A.*

**Chloroform and Ether Anesthesia.**—Poncet (*Gaz. hebdomadaire de Méd. et de Chir.*, March 6, 1902), after an admirable review of this all-important subject, states in conclusion: (1) Chloroform is more dangerous than ether, as all statistics show. The researches of Julliard show one death in every two or three thousand chloroformizations, and only one death in every thirteen or fourteen thousand etherizations. The author reports twenty-nine thousand personal etherizations with only one death, and that was a child who had organic heart disease. (2) Ether does not cause the primary or reflex laryngeal syncope at the onset of anesthesia, which is so suddenly fatal and is relatively frequent when chloroform is used. Ether alone is to be preferred to mixtures for purposes of anesthesia. (3) It has not been proved, and no statistics have established, that the post-operative pulmonary complications, such as bronchitis, congestion of the lungs, broncho-pneumonia, edema of the lungs, etc., are due to the irritant action of the vapors of ether. The so-called etherization pneumonia or chloroformization pneumonia are essentially infection pneumonias. The pulmonary complications are probably just as frequent in those operative cases which receive no anesthetic. (4) It is not exact to say that the mortality after the narcosis by ether becomes, in the days following the operation, the same as that caused by chloroform, which kills during the anesthesia upon the operating-table. This opinion becomes much less justified when one considers that the vapors of chloroform are more irritant than those of ether. (5) The contra-indications to anesthesia are the same as they formerly were. Cardiac or pulmonary lesions do not absolutely contra-indicate etherization for a long or painful operation, but instead, the anesthesia in these special cases must be administered with extreme care.—*Amer. Journ. of the Med. Sciences*.

## HINTS, QUERIES, AND COMMENTS.

---

### Improvement in Rubber Cups for Polishing Teeth.

WE are in receipt of the following suggestion, which we publish for the benefit of those who have met with the same difficulty:

"Trusting that it may be of service, I wish to suggest an improvement in the manufacture of hollow rubber cups for polishing teeth. As now made, when the cup is pressed into the wet pumice the air contained inside the cup does not allow the powder to enter, so that on withdrawal of the cup a ring of wet pumice is found only on the outside, where it is not wanted. By punching a hole, about the largest of the Ainsworth punch series, near the mandrel the trouble is entirely overcome and the strength of the cup not impaired.—A. C. CAMERON, Redlands, Cal."

---

## DENTAL SOCIETY ANNOUNCEMENTS.

---

### NEW HAMPSHIRE DENTAL SOCIETY.

THE New Hampshire Dental Society will hold its annual meeting at Concord, N. H., November 11, 12, and 13, 1902. All members of the profession are cordially invited to attend.

FRED F. FISHER, *Sec'y.*

---

### OHIO STATE DENTAL SOCIETY.

THE thirty-sixth annual meeting of the Ohio State Dental Society will be held at the Great Southern Hotel, Columbus, December 2, 3, and 4, 1902. This meeting promises to be one of the largest in the society's history. Prominent members of the profession will present papers, and some of the most noted clinicians will operate.

Arrangements have also been completed for one of the most extensive exhibits of dental aids and appliances ever seen.—a veritable exposition in dental art and manufactures.

Members of the profession are cordially invited to be present.

OTTO ARNOLD, Columbus, *Pres.*,

S. D. RUGGLES, Portsmouth, *Sec'y.*

---

### COLORADO STATE BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of the State of Colorado will meet in Denver, Col., on Tuesday, December 2, 1902, at 9 A.M., for examination of applicants for license to practice dentistry in Colorado.

In addition to written and oral examination, applicants must supply their own patients, instruments, and materials, and come prepared to do practical work under the supervision of the board, which will pass upon suitable selection of cavities. All applications must be completed prior to December 2d. For application blanks and information, address

H. F. HOFFMAN, *Sec'y.*,

611 California Bldg., Denver, Col.



## OHIO STATE BOARD OF DENTAL EXAMINERS.

THE Ohio State Board of Dental Examiners will meet at the Neil House, Columbus, Ohio, November 25, 26, and 27, 1902, to examine applicants for registration. Applications should be filed by November 15th.

For further particulars and application blanks address

H. C. BROWN, *Sec'y*,

112 E. Broad st., Columbus, O.

## PENNSYLVANIA BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg. December 16-19, 1902.

For application papers or other information address Hon. James W. Latta, secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP, *Sec'y*.

## DENTAL COMMISSIONERS OF CONNECTICUT.

THE Dental Commissioners of the State of Connecticut hereby give notice that they will meet at Hartford, on Tuesday, Wednesday, and Thursday, November 11, 12, and 13, 1902, respectively, to examine applicants for license to practice dentistry, and for the transaction of any other proper business.

The practical examination in operative and prosthetic dentistry will be held Tuesday, November 11, at 9 A.M., in Putnam Phalanx Armory, corner Haynes and Pearl streets. The written theoretic examination will be held Wednesday and Thursday, November 12 and 13, 1902, at the Capitol.

All applicants should apply to the Recorder for proper blanks, and for the revised rules for conducting the examinations. Application blanks must be carefully filled in and sworn to, and with fee, twenty-five dollars, filed with the Recorder on or before November 4, 1902.

By direction of the Dental Commissioners.

J. TENNEY BARKER, *Recorder*.

## LIST OF UNITED STATES PATENTS

## PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING SEPTEMBER, 1902.

- Sept.* 2.—No. 708,000, to CHARLES C. ALLEN. Polishing strip.  
 " 9.—No. 708,772, to CHAPIN F. LAUDERDALE. Dental gold annealer.  
 " —No. 708,811, to MERRILL W. HOLLINGSWORTH. Machine for forcibly casting dental bridges.  
 " 16.—No. 709,410, to JOHN L. KELLY. Dental bridge-work.  
 " 23.—No. 709,812, to GEORGE S. BENNETT and JOSEPH W. THATCHER. Dental mouth-mirror.  
 " " —No. 709,830, to GEORGE B. SNOW. Gas blow-pipe.  
 " " —No. 709,834, to CLARENCE R. VANDERPOOL. Dental gauge.  
 " 30.—No. 709,927, to CORWIN T. PRICE. Tooth-brush and powder cabinet.  
 " " —No. 709,973, to LUCIEN EILERTSEN. Dental apparatus.  
 " " —No. 710,306, to GEORGE W. TODD. Rubber-dam holder.

# A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

- Broomell** (I. N.) Anatomy and histology of the mouth and teeth. 2. ed. Phila., 1902, P. Blakiston's Son & Co., x, 17-500 pp. 8°.
- Grant** (H. H.) A text-book of surgical principles and surgical diseases of the face, mouth and jaws, for dental students. Phila., 1902, W. B. Saunders & Co., 231 pp., 1 pl. 8°.
- Woodburn** (W. D.) Notes on medicine for medical and dental students. London, 1902, Baillière, Tindall & Cox, 80 pp. 8°.
- Ames** (Aaron). [1830-1902.] (Obituary. Dental Cosmos, Phila., 1902, xlv, 982.—**Anderson** (Martha.) Preparation of teeth for microscopic study. Dental Digest, Chicago, 1902, viii, 756-758.—**Anderson** (R. J.) The relationship of the premaxilla in bears. Rep. Brit. Ass. Adv. Sc., Lond., 1901, lxxi, 681.—**Andrews** (R. R.) Embryology of the dental pulp. Dental Digest, Chicago, 1902, viii, 658-666.—*Also*: Dental Brief, Phila., 1902, vii, 496-503.—*Also*: Internat. Dent. J., Phila., 1902, xxiii, 621-629.—**Angle** (E. H.) Orthodontia as a specialty. Dental Cosmos, Phila., 1902, xlv, 905-910.—**Arnold** (L. H.) Some phases of oral hygiene. Dental Rev., Chicago, 1902, xvi, 711-717.—**Ascher**. Condensatori per amalgama con rivestimento di gomma piena. Gior. di corrisp. p. dentisti, Milano, 1902, xxxi, 248.—**Audry** (C.) & **Constantin**. Corne syphilitique de la moustache. Bull. Soc. franç. de dermat. et syph., Par., 1902, xiii, 408-410.—**Baccarani-Solimei** (U.) L'ematologia della cloronarcosi. Clin. chir., Milano, 1902, x, 237; 337.—**Bacques**. Destruction du voile du palais par syphilis héréditaire; prothèse. Rev. de stomatol., Par., 1902, ix, 377-379.—**Avulsion** d'une dent par traumatisme; reimplantation vingt-une heures après l'accident. *Ibid.*: 379.—**Barber** (W. A.) Sterilization of instruments and use of distilled water in oral cavity. Items Interest, N. Y., 1902, xxiv, 641-644.—**Barker** (A. W.) Complicated fracture of the inferior maxillary bone. Am. Vet. Rev., N. Y., 1902-3, xxvi, 551.—**Beck** (R.) Paraffin; an ideal material for the filling of root canals. Dental Digest, Chicago, 1902, viii, 758-763.—**de Beurmann & Ramond**. Glossite exfoliatrice marginée ambulante. Ann. de dermat. et syph., Par., 1902, 4. s., iii, 738-743.—*Also*: Bull. Soc. franç. de dermat. et syph., Par., 1902, xiii, 372-377.—**Black** (G. V.) A restatement of the principles of extension for prevention and some correlated subjects. Brit. J. Dent. Sc., Lond., 1902, xlv, 732; 784.—*Dental science and literature, report of the committee.* Dental Digest, Chicago, 1902, viii, 641-658.—**Bloomfield** (S. J.) Replantation after accident. Dominion Dent. J., Toronto, 1902, xiv, 367.—**Boenning** (H. C.) Suppurative processes involving the maxillæ. Dental Cosmos, Phila., 1902, xlv, 931-936.—**Boyd** (F. D.) Enlarged lingual tonsil with report of a case. N. Albany M. Herald, 1901-2, xxi, 888.—**Braquehay**. Malformations congénitales multiples; bec-de-lièvre unilatéral avec saillie de l'intermaxillaire, sans division de la voûte palatine ni du voile; luxation congénitale des deux hanches en haut et en avant; pieds bots valgus congénitaux. Mém. et Bull. Soc. de méd. et chir. de Bordeaux (1897), 1898, 305-308.—**Briggs** (E. C.) Porcelain inlays. Internat. Dent. J., Phila., 1902, xxiii, 630-633.—**Brindel**. Tuberculose phagédénique aiguë des gencives, des maxillaires supérieur et inférieur (forme osteomyélique sub-aiguë) de la face interne des joues et des lèvres, du voile du palais et du larynx. Mém. et Bull. Soc. de méd. et chir. de Bordeaux (1900), 1901, 358-362.—**Brown** (G. V. I.) General nervous manifestations in relation to the jaws and teeth. J. Am. M. Ass., Chicago, 1902, xxxix, 487-492.—**Brown** (O. M.) The systematic influence of mercury in amalgam and red rubber. Dental Rev., Chicago, 1902, xvi, 732-734.—**Bruck** (W. W.) Die Nothwendigkeit der Einführung der Zahnpflege im Heere. J. f. Zahnh., Berl., 1902, xvii, 103-105.—*Also*: *transl.*: Items Interest, N. Y., 1902, xxiv, 657-713.—**Buisseret** (A.) Abcès chaud de la voûte, palatine et septicémie

- consécutifs à une malheureuse tentative d'extraction dentaire. *Scalpel*, Liège, 1902-3, iv, 58.—**Calvo-Flores** (L. A.) La antisepsia de la boca como medio de evitar las infecciones locales y generales en los niños; agentes que pueden emplearse y maneras de llevarla á cabo. *Gac. méd. de Granada*, 1902, xx, 272; 318.—**Campbell** (W. F.) Carcinoma of the jaw two years after secondary operation. *Brooklyn M. J.*, 1902, xvi, 398.—**Canning** (H. A. E.) Notes on a case of unerupted twelve-year molar in a patient aged 56. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 491.—**du Castel**. Syphilis du pharynx. *Art. méd.*, Par., 1902, xcv, 97-109.—**Cates** (B. B.) Polypi in antrum of Highmore, simulating tumor; resection of upper jaw; recovery. *Cincin. Lancet-Clinic*, 1902, n. s., xlix, 219.—**Chaine** (J.) Sur le dépresseur de la mâchoire inférieure du Chrysotis amazone (*Chrysotis amazonicus* L.). *Proc. verb. Soc. d. sc. phys. et nat. de Bordeaux*, 1900-1901, 66-68.—Le dépresseur de la mâchoire inférieure chez les plongeurs. *Ibid.*: 78-80.—Considérations générales sur le dépresseur de la mâchoire inférieure. *Ibid.*: 97-100.—**Cheatham** (W.) Chancre of the tonsils. *Am. Pract. and News*, Louisville, 1902, xxxiv, 89-92.—**Chemie** (Zur) modern Füllungsmaterialien. *Zahnkunst*, Bresl., 1902, vi, Nos. 34; 35.—**Chittenden** (C. C.) The legal status of the term reputable as applied to dental colleges. *J. Am. M. Ass.*, Chicago, 1902, xxxix, 608-612.—**Cigrand** (B. J.) A knowledge of faciology essential to dental prosthesists. *Dental Rev.*, Chicago, 1902, xvi, 717-726.—**Collier** (M.) Malignant disease (epithelioma) of antrum. *Med. Press and Circ.*, Lond., 1902, n. s., lxxix, 195.—**Contenau** (G.) Les hôpitaux, l'école et dispensaire dentaire de Paris. *Rev. de stomatol.*, Par., 1902, ix, 381-386.—**Cowan** (W. D.) Replanting. *Dominion Dent. J.*, Toronto, 1902, xiv, 364-366.—**Cox** (F.) An unusual fracture of the superior maxilla. *Lancet*, Lond., 1902, ii, 507.—**Cruet** (L.) Les dentistes et le doctorat en médecine. *J. d'hyg.*, Par., 1902, xxvii, 57.—**Curtis** (G. L.) Electric ozonation in neuralgia. *Dental Digest*, Chicago, 1902, viii, 666-671.—*Also*: *Internat. Dent. J.*, Phila., 1902, xxiii, 635-639.—**Custer** (L. E.) The X-ray as applied to dental practice. *Dental Reg.*, Cincin., 1902, lvi, 433-445.—**Davezac**. Phlegmon amygdalien. *Mém. et Bull. Soc. de méd. et chir. de Bordeaux* (1898), 1899, 42-44.—**Death** under chloroform. *Med. Press and Circ.*, Lond., 1902, n. s., lxxiv, 236.—**Delair** (L.) Voile artificiel à clapet. *Odontologie*, Par., 1902, 2. s., xv, 59-67.—Nécessité du chirurgien-dentiste dans l'armée. *Ibid.*: 103-106.—**Derville** (L.) De l'emploi du chlorophénol dans le traitement des ulcérations tuberculeuses du pharynx et de la bouche. *J. d. sc. méd. de Lille*, 1902, ii, 193-200.—**Deutschländer** (E.) Ein Fall von vollständiger rechtsseitiger Erblindung nach Zahncaries. *Jahresb. d. schles. Gesellsch. f. vaterl. Cult.*, 1901, Bresl., 1902, lxxix, med. Sect., 6.—**Dolamore** (W. H.) Two odontomes. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 539-550.—**Dunogier** (S.) De l'ostéopériostite phlegmoneuse des mâchoires d'origine dentaire; de sa pathogénie; son traitement. *Rev. trimest. Suisse d'odont.*, Winterthur und Genève, 1902, xii, 198-209.—**Eames** (G. F.) Oral hygiene. *J. Am. M. Ass.*, Chicago, 1902, xxix, 482-485.—**Ebersole** (W. G.) Combating pain in dental operations. *Dental Summary*, Toledo, 1902, xxii, 497-506.—**Eid** (A.) A set of artificial teeth lodged in the pharynx. *Arch. Roentg. Ray*, Lond., 1902-3, vii, 34, 1 pl.—**Elliott** (Alban Vaughan.) [1836-1902.] (Obituary.) *Dental Cosmos*, Phila., 1902, xlv, 982.—**Engelmann** (F.) Ueber Erfahrungen mit dem Roth-Drager'schen Sauerstoffnarkosenapparat. *Centralbl. f. Chir.*, Leipzig, 1902, xxix, 961-967.—**Erben** (S.) Palatal paralysis. [Abstr.] *Dental Digest*, Chicago, 1902, viii, 764.—*Also*: *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 497.—**Escat** (E.) Traitement de l'hémorragie chirurgicale de l'amygdale. *Presse méd.*, Par., 1902, ii, 835.—**Estudio** sobre el blanqueamiento de los dientes. *Correo odont. internac.*, Madrid, 1902, vii, 74-80.—**Ferran** (C.) & **Rosenthal**. Contribution à l'étude de l'hypertrophie de l'amygdale linguale. *Lyon méd.*, 1902, xcix, 245-258.—**Ferrier** (J.) Sur la localisation erronée de la douleur dentaire. *Rev. trimest. Suisse d'odont.*, Winterthur und Genève, 1902, xii, 183-186.—**Fick** (R.) Bemerkungen zur Wolfsrachenbildung. *Arch. f. klin. Chir.*, Berl., 1902, lxxviii, 299-305.—**Fielden** (V. G. L.) Nitrous oxide and oxygen as an anæsthetic in general surgery. *Dublin J. M. Sc.*, 1902, cxiv, 189-194.—**Fillebrown** (T.) A harelip incision. *N. York M. J.*, 1902, lxxvi, 358.—**Forchheimer** (F.) Some remote diseases arising from tonsillar infection. *Arch. Pediat.*, N. Y., 1902, xix, 656-666.—**Frèche**. Chancre induré de la lèvre supérieure. *Mém. et Bull. Soc. de méd. et chir. de Bordeaux* (1897), 1898, 37-39.—**Friedrich**. Physikalische Therapie der Erkrankungen der Nase, des Rachens und des Kehlkopfes. *Handb. d. physikal. Therap.*, Leipzig, 1902, Teil 2, i, 311-326.—**Froehlich**. Bericht über die mir zur Untersuchung Zugewiesenen Kinder der Ferien- (Halb)-Kolonien. *Deutsche zahnärztl. Wechschr.*, Wiesb., 1902, v, 266.—**Galippe** (V.) Étude sur l'hérédité des anomalies des maxillaires et des dents. *Rev. de stomatol.*, Par., 1902, ix, 369-377.—**Galliard** (L.) & **Francillon** (Mlle.) Un cas de noma; guérison. *Bull. et mém. Soc. méd. d. hôp. de Par.*, 1902, 3. s., xix, 797-802.—**Gaudier & Chevalier**. Deux cas de tumeurs thyroïdiennes de la base de la langue. *Écho méd. du nord*, Lille, 1902, vi, 397-408.—**Geist-Jacobi** (G. P.) Altrömische Instrumente aus der Saalburg. *Odontol. Bl.*, Berl., 1902-3, vii, 219-223.—**Genese** (D.) Stomatitis from a dental stand-



- point. *Internat. Dent. J.*, Phila., 1902, xxiii, 644-646.—**Godet**. L'eau oxygénée dans la stomatite gangréneuse. *Anjou med.*, Angers, 1902, ix, 189.—**Godlee** (R. J.) & **Bucknall** (T. R. H.) A pharyngeal pouch of large size removed by operation. *Med.-Chir. Tr.*, Lond., 1901, lxxxiv, 465-483, 3 pl.—**Goldie** (W.) Oral secretions and their relation to disease. *Dominion Dent. J.*, Toronto, 1902, xiv, 348-357.—**Goodale** (J. L.) The local pathology of acute general infections arising through the lymphoid tissue of the fauces. *Boston M. and S. J.*, 1902, cxlvii, 349-352.—**Gorshkoff** (Y. P.) O tsestralnikh provodnikakh vkusovikh oshtshishtsheniy. [Central conductors of taste sensations.] *Nevrol. Vestnik*, Kazan, 1902, x, No. 1, 11-34.—**Goslee** (H. J.) Art and invention; report of the committee. *Dental Digest*, Chicago, 1902, viii, 742-748.—Insertion of gold fillings in artificial teeth, as applied to crown and bridge-work. *Items Interest*, N. Y., 1902, xxiv, 652-656.—**Gottstein** (G.) Das funktionelle Resultat nach Gaumennaht. *Jahresb. d. schles. Gesellsch. f. vaterl. Cult.*, 1901, Bresl., 1902, lxxix, med. Sect., 142.—**Grant** (H. H.) Ulcération produite par une dent cariée. [Transl.] *Progrès dent.*, Par., 1902, xxix, 269.—**Greenbaum** (L.) Root-fillings and their relative value. *Dental Cosmos*, Phila., 1902, xlv, 910-913.—**Greve**. Sui vari metodi di rendere piu durevoli e atti ad essere dipinti i modelli di gesso. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 236-238.—**Gromakowsky** (D.) Diplococcus im Sputum als Antagonist der pyogenen Staphylo- und Streptokokken. *Centralbl. f. Bakteriologie*, [etc.], 1. Abt., Jena, 1902, xxxii, 272.—**Guida** (T.) La malattia di Riga, o produzione sottolinguale; etiologia e patogenesi; profilassi. *Arch. di patol. e clin. infant.*, Napoli, 1902, i, 54; 95.—**Hällström** (A. J.) Primaarisen huulisyövän suhteesta regionaariisiin rauhasiin. [Ueber d. gegenseitige Verhältnis zwischen den Lippenkrebs und den regionären Lymphdrüsen. *Uebers.*, 244.] *Duodecim*, Helsinki, 1902, xviii, 225-244.—**Hanna** (G. E.) Doctorate address. *Dominion Dent. J.*, Toronto, 1902, xiv, 345-348.—**Harrison** (F.) The principles of bridge-work, elucidating what may be considered essential of the scientific relations to be borne in mind. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 556-558.—**Harrison** (W.) Should private pupilage be abolished? *Ibid.*: 486-491.—**Hatch** (R. M.) Some further observations on the use of chloride of ethyl as a general anæsthetic. *Ibid.*: 551-555.—**Herbst** (E.) Due nuovi metodi per rifare l'angolo di un dente incisivo. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 238-241.—Per assicurare i denti scossi. *Ibid.*: 241-245.—**Höncz** (K.) Die Beziehungen der Stomatologie zu den übrigen Fachwissenschaften der Medicin. *Wien. zahnärztl. Monatssch.*, 1902, iv, 291-299.—**Hoff** (N. S.) A study in bleaching teeth. *Dental Reg.*, Cincin., 1902, lvi, 452-465.—**Hofheinz** (R. H.) Extension for prevention. *Dental Cosmos*, Phila., 1902, xlv, 914-919.—**Holman** (C. J.) The blood in relation to anæsthesia; especially chloroform and ether. *St. Paul M. J.*, 1902, iv, 618-620.—**Hudson** (Edward.) [1772-1833.] *Trueman* (W. H.) Dr. Edward Hudson, Dentist. *Dental Brief*, Phila., 1902, vii, 475-494, port.—**Hudson** (H.) The relation of environment to dental caries. *Dominion Dent. J.*, Toronto, 1902, xiv, 278-282.—**Hüster**. Die Gefahren des wachsenden Zuckerkonsums für die Zähne. *Zahnärztl. Rundschau*, Berl., 1902, xi, No. 528.—**Hughes** (Helen) The administration of chloroform and ether. *N. York M. J.*, 1902, lxxvi, 364-366.—**Hutchinson** (J.) jr. A case of chancre of the lip. *Polyclin.*, Lond., 1902, vi, 187.—A case of dental cyst. *Ibid.*: 189.—Excision of the Gasserian ganglion. *Ibid.*: 190.—Chronic sclerosis of the tongue, resulting in cancer. *Ibid.*: 205.—**Inglis** (O. E.) Review of Dr. Smith's paper on: An original system of tightening loose lower incisors. *Dental Digest*, Chicago, 1902, viii, 726-737.—**Ivy** (R. S.) A case of erosion. *Dental Cosmos*, Phila., 1902, xlv, 929.—**Jack** (L.) A peculiar case of resorption. *Internat. Dent. J.*, Phila., 1902, xxiii, 633-635.—**Jacotini** (G.) Gastrosplasma e cementite infettiva. *Boll. d. clin.*, Milano, 1902, xix, 310-322.—**Jacquet**.—Pelade d'origine dentaire. *Ann. de dermat. et syph.*, Par., 1902, 4. s., iii, 698.—Also: *Bull. Soc. franç. de dermat. et syph.*, Par., 1902, xiii, 332.—**Jean** (F.) *Dentisterie opératoire*. *Odontologie*, Par., 1902, n. s., xv, 113-117.—**Jessen**. Zahnhygiene und Volksgesundheit. *Deutsche zahnärztl. Ztg.*, München, 1902, No. 19.—**Kanasugi** (E.) Tuberculosis of the pharynx. *Sei-i-Kwai M. J.*, Tōkyō, 1902, xxii, 93-98.—**Kassel** (W.) Zur operativen Behandlung der angeborenen Gaumenspalte, mit besonderer Rücksicht auf die funktionellen Erfolge. *Beitr. z. klin. Chir.*, Tübing., 1902, xxxv, 296-317.—**Kelly** (A. B.) Bromide of ethyl anæsthesia in operations in the throat. *Brit. M. J.*, Lond., 1902, ii, 588-593.—**Kiliani** (O. G. T.) Atypical resection of the upper jaw. *Ann. Surg.*, Phila., 1902, xxxvi, 442.—**Kirkpatrick** (T. P. C.) The prolongation of nitrous oxide anæsthesia for dental operations by Paterson's method. [Abstr.] *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 498.—**Knight** (W.) Modern dentist from a medical standpoint. *Dental Digest*, Chicago, 1902, viii, 753-756.—Also: *Internat. Dent. J.*, Phila., 1902, xxiii, 646-651.—**Knowles** (V.) Special impression trays; a further use for the compo' swaging flask. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 561-564.—**Kollbrunner**. *Adrenalin*. *Schweiz. Vetsch. f. Zahnh.*, Winterthur und Genève, 1902, xii, 196-199.—**Lambert** (M.) & **Meyer** (E.) Action de la sécrétine sur la sécrétion salivaire. *Compt. rend. Soc. de biol.*, Par., 1902, 11. s., iv, 1044.—**Lankaster** (H. N.) A few reflexions on pyorrhœa. *Items In-*

- terest, N. Y., 1902, xxiv, 645-647.—**Le Fever** (C. W.) A new inhaler especially intended for use in operations on the eye or face. *Proc. Phila. Co. M. Soc.*, Phila., 1902-3, xxiii, 179-181.—**Leipzig** (H. A.) Hemorrhage after tonsillotomy. *Med. Fortnighly*, St. Louis, 1902, xxii, 603-611.—**Madzsar** (G.) Bemerkungen zu Prof. Scheff's Aufsatz "Ueber Nervociden." *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1902, xviii, 368-374.—**Magee** (J. M.) Dental examining boards or politicians. *Dominion Dent. J.*, Toronto, 1902, xiv, 272-277.—**Mahu** (G.) L'air chaud en rhinologie. *Odontologie*, Par., 1902, 2. s., xv, 69-80.—**Marsden** (P. H.) On radiography applied to dental surgery. *Arch. Roentg.*, Ray, Lond., 1901-2, vi, 54-57, 2 pl.—**Mitchell** (W.) The artistic treatment of artificial teeth. *Dental Rev.*, Chicago, 1902, xvi, 707-711. [Discussion], 735-751.—**Morell** (H.) Dangers of incomplete anesthesia. *Am. Med.*, Phila., 1902, iv, 450.—**Morrison** (M. A.) Some things dentists know little about. *Dental Cosmos*, Phila., 1902, xlv, 961-964.—**Moure**. De l'ouverture des abcès amygdaliens. *Mém. et Bull. Soc. de méd. et chir. de Bordeaux* (1898), 1899, 36-42.—**Murray** (C. A.) National professional standards and registration for dentists in Canada. *Dominion Dent. J.*, Toronto, 1902, xiv, 357-364.—**Murray** (W. R.) Chronic inflammation of the pharyngeal tonsil without interference with nasal breathing. *Northwest. Lancet*, Minneap., 1902, n. s., xxii, 321-323.—**Neisser** (A.) Lippenekzeme und Mundwässer, insbesondere Odol-Mundwasser. *Allg. med. Centr.-Ztg.*, Berl., 1902, lxxi, 731.—**Nieriker** (H.) Die elastische Inhalationsmaske zur Ausführung von Narkosen. *Med. Rundschau*, Berl., 1902, 1121; 1133.—Erläuterungen über die elastische Inhalationsmaske zur Ausführung von Narkosen. *Schweiz. Vrtljschr. f. Zahnh.*, Winterthur und Genève, 1902, xii, 192-196.—**Noguera** (E. P.) El xeroforma. *Correo odont. internac.*, Madrid, 1902, vii, 54-73.—**Noyes** (F. B.) A comparative study of the attachment of the teeth. *Internat. Dent. J.*, Phila., 1902, xxiii, 639-643.—*Also*: *Dental Digest*, Chicago, 1902, viii, 749-753.—The structural requirements for strength in enamel walls and margins. *Dominion Dent. J.*, Toronto, 1902, xiv, 301-320. [Discussion], 368-377.—**Orr-Gray** (W.) Aetiology of discolored teeth and bleaching of the discoloration. *Austral. J. Dent.*, Melbourne, 1901-2, v, 269-273.—**Otte** (J. A.) Epulis of the lower jaw. *China M. Miss. J.*, Shanghai, 1902, xvi, 127.—**Papot**. [Tableau d'enseignement professionnel.] *Odontologie*, Par., 1902, 2. s., xv, 119-122, 1 tab.—**Parker** (H. F.) Notes on the use of ethyl chloride as a general anæsthetic. *St. Barth. Hosp. J.*, Lond., 1901-2, ix, 173.—**Peters** (W.) Di un nuovo apparecchio per stampare, del dentista Sandvig di Stocolma. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 245-247.—**Pick** (V.) Ein Fall von objectiv wahrnehmbarem Ohrengeräusch infolge von Chorea pharyngis. *Wien. klin. Rundschau*, 1902, xvi, 629.—**Piergili** (S. B.) Mestruazione ed odontalgia. *Clin. ostet.*, Roma, 1902, iv, 263-266.—**Poinset** (P.) Nouveau moyen pour obtenir le moulage des bouches. *Odontologie*, Par., 1902, n. s., xv, 109-111.—**Preiswerk** (G.) Oberkieferfractur. *Oesterr.-ungar. Vrtljschr. f. Zahnh.*, Wien, 1902, xviii, 364-367.—**Price** (W. A.) The technique of applying cataphoresis successfully. *Dental Summary*, Toledo, 1902, xxii, 510-517.—**Quintin**. Le déchaussement des dents est-il quérissable? *Progrès méd. belge*, Brux., 1902, iv, 103-108.—**Raoult & Thiry** (C.) Un cas de fracture comminutive du maxillaire supérieur avec sinusite consécutive. *Soc. de méd. de Nancy*, C.-r., 1900-1901, 48-51.—**Recent** legislation and the D. D. S. degree. *Dental Cosmos*, Phila., 1902, xlv, 977-980.—**Renkenberger** (F. E.) Care of deciduous teeth. *Dental Summary*, Toledo, 1902, xxii, 525-541.—**Rhein** (M. L.) Porcelain roots. *Dental Cosmos*, Phila., 1902, xlv, 919-924.—**Riggs's** disease [*Edit.*] *Brit. M. J.*, Lond., 1902, ii, 628.—**Roberts** (J. P.) The use of anesthetics by the general practitioner with special reference to chloroform. *Penn. M. J.*, Pittsburg, 1902, v, 660.—**Robin** (P.) Elementi di terapeutica patogena della carie dentale e insensibilizzazione non devitalizzante della dentina. [Transl.] *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 249-259.—**Rose** (F.) The pros and cons of fixed bridges: a box crown without removing tooth contours. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 558-560.—**Rose** (W. S.) Pyorrhœa alveolaris. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 721-731.—**Ruault** (A.) Note sur la technique du morcellement des amygdales. *Rev. hebdom. de laryngol.* [etc.], Par., 1902, ii, 241-248.—**Ryan** (L. R.) Pharyngo-mycosis. *Peoria M. J.*, 1902, vii, 65-70.—**Sandvig** (A.) L'aluminium dans la pratique dentaire. *Progrès dent.*, Par., 1902, xxix, 257-267.—**Sauvez**. De l'emploi de l'extrait des capsules surrénales en particulier dans la chirurgie dentaire. *Odontologie*, Par., 1902, 2. s., xv, 81-102.—**Schröder** (E.) Studi preliminari sul prognatismo della parte superiore del volto. *Gior. di corrisp. p. dentisti*, Milano, 1902, xxxi, 198-235.—**Schultze**. Das Verhalten der Zunge bei Tetanie. *Arch. f. Psychiat.*, Berl., 1902, xxxvi, 329.—**Schwartz** (G. W.) Porcelain bridgework. [Abstr.] *Dental Digest*, Chicago, 1902, viii, 672.—**Senn**. Ueber einen Fall settener, anormaler Dentition. *Schweiz. Vrtljschr. f. Zahnh.*, Winterthur und Genève, 1902, xii, 239-241.—**Shulze** (W. H.) Orthodontia. *West. Dent. J.*, Kansas City, 1902, xvi, 390-408.—**Simpson** (O. H.) New swaging device and the making of metal plates. *Dental Summary*, Toledo, 1902, xxii, 520-524.—**Smith** (D. D.) An original system of tightening loose lower incisors and cuspids, embracing a method of securing substitutes without clasps or plates, when these teeth are missing;



- together with a discussion of the question of pulp devitalization; when and how; in sound teeth. *Dental Digest*, Chicago, 1902, viii, 629-640.—**Smith** (T. L.) Ein Fall von Struma accessoria baseos linguae behandelt durch Pharyngotomia transhyoidea. *Nord. med. Ark.*, Stockholm, 1902, 3. f., ii, afd. 1, no. 10, 1-16.—**Snel** (J. J.) Een schadelijk gevolg der narcose. *Nederl. Tijdschr. v. Geneesk.*, Amst., 1902, 2. R., xxviii, d. 2, 339-344.—**Sparks** (R. E.) Indications for extracting the sixth-year molars. *Dental Cosmos*, Phila., 1902, xlv, 964-968.—**Steele** (E. M.) The treatment of facial neuralgia. *Items Interest*, N. Y., 1902, xxiv, 647.—**Stern** (D.) Essential oils; their application in dentistry. *Dental Reg.*, Cincin., 1902, lvi, 446-452.—**Stieda** (L.) Ueber die Foveolae palatinae (Gaumengrübchen.) *Anat. Anaz.*, Jena, 1902, xxi, Ergänzshft., 130.—**Stoppany**. Ein Fall von seltener Zahnretention. *Schweiz. Vrtljschr. f. Zahnk.*, Winterthur und Genève, 1902, xii, 234-238.—**Szabó** (J.) Ueber Ignipunctur in der Behandlung accidentell exponierter Pulpen. *Oesterr.-ungar. Vrtljschr. f. Zahnk.*, Wien, 1902, xviii, 368-374.—**Tandler**. Einiges über das Antrum Highmori in Bezug auf die Zahnheilkunde. *Wien. zahnärztl. Monatssch.*, 1902, iv, 281-290.—**Taylor** (W. J.) Commercialism vs. professionalism. *Pacific Dent. Gaz.*, San Fran., 1902, x, 577-588.—**Thilo**. Chloroethyl und dessen Verwendung. *Zahnkunst*, Bresl., 1902, vi, No. 33.—**Tietze**. Vorstellung eines Falles von Lues des Oberkiefers. *Jahresb. d. schles. Gesellsch. f. vaterl. Cult.*, 1901, Bresl., 1902, lxxix, med. Sect., 156.—Ein Tumor der rechten Unterkiefergegend. *Ibid.*: 174-176.—**Tucker** (A. V.) Five-rooted third molar. *Dental Digest*, Chicago, 1902, viii, 725.—**Vacher** (L.) Note sur l'ablation des amygdales enchâtonnées chez l'adulte. *Rev. hebdom. de laryngol.* [etc.], Par., 1902, ii, 184-186.—**Valderrama y Barrenechea** (J.) Taking plaster impressions of mouths in which the teeth form undercuts; a new method; securing governance of fracture. [Abstr.] *Dental Summary*, Toledo, 1902, xxii, 542-544.—**Vanytsky** (R.) O poměru jazyka při obrně nervu lícního. [La position de la langue dans la paralysie faciale. Rés., 422.] *Sborn. klin. v. Praze*, 1901-2, iii, 415-422.—**Villar**. Arrachement d'un segment de l'artère linguale au cours de la ligature de cette artère en dehors du triangle hypoglosso-hyoidien, au-dessous du tendon digastrique. *Mém. et Bull. Soc. de méd. et chir. de Bordeaux* (1899), 1900, 110.—**Voisin** (R.) Paralysie partielle du voile du palais d'origine traumatique. *Ann. d. mal. de l'oreille, du larynx* [etc.], Par., 1902, xxviii, pt. 2, 168-170.—**Waligórski** (C.) Przypadek rzadkiej wady rozwojowej. [Rare congenital deformity.] *Przegl. lek.*, Kraków, 1902, xli, 330.—**Walkhoff** (O.) Einige odontologische Ergebnisse für die Anthropologie. *Oesterr.-ungar. Vrtljschr. f. Zahnk.*, Wien, 1902, xviii, 353-364, 3 pl.—**Wallace** (J. S.) Some effects of the refinement of food. *Brit. J. Dent. Sc.*, Lond., 1902, xlv, 769-783.—The irregularities of the teeth. *Dental Rec.*, Lond., 1902, xxii, 385-391.—**Waller** (A. D.) Demonstration of a new method for rapidly estimating the percentage of CHCL<sub>3</sub> vapour in mixtures of CHCL<sub>3</sub> and air. *Proc. Physiol. Soc. Lond.*, 1902, p. xxxv.—**Wallis** (C. E.) On the use of calcium chloride internally in hæmophilia. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 493-495.—**Wandless** (H. W.) A new folding tongue depressor. *Laryngoscope*, St. Louis, 1902, xii, 684.—**Ward** (C. H.) The origin of cosmetic dentistry. *Dental Office and Lab.*, Phila., 1902, 4. s., xvi, 129-141.—**Weber**. Pulsirende Tonsillen. *Jahresb. d. schles. Gesellsch. f. vaterl. Cult.*, 1901, Bresl., 1902, lxxix, Med. Sect. 163.—**Webster** (A. E.) The comparative value of ordinary sealings for root-canal dressing as excluders of bacteria. *Dental Cosmos*, Phila., 1902, xlv, 925-929.—**Whinery** (J. B.) Practical suggestions on the administrations of ether and chloroform. *Physician and Surg.*, Detroit and Ann Harbor, 1902, xxiv, 262-270.—**Whitstar** (W. H.) Pain. *Dental Summary*, Toledo, 1902, xxii, 506-510.—**Wienterstein** (H.) Zur Kenntnis der Narkose. *Ztschr. f. allg. Physiol.*, Jena, 1902, i, 19-33.—**Wilcox** (A. A.) Dental cements and the cause of their failure as filling materials. *Dominion Dent. J. Toronto*, 1902, xiv, 257-272.—**Wolff** (O.) Schiefer Mund nach Halsdrüsenextirpation operative Heilung. *Centralbl. f. Chir.*, Leipz., 1902, xxix, 365-367.—**Wood** (W. C.) Extensive necrosis of lower jaw. *Brooklyn M. J.*, 1902, xvi, 396.—**Woolley** (J. H.) Suggestions in the rational treatment of necrosed bone. *Dental Rev.*, Chicago, 1902, xvi, 726-729. [Discussion.] 755-768.—**Yonge** (E. S.) The treatment of intractable suppuration in the maxillary antrum. *J. Brit. Dent. Ass.*, Lond., 1902, xxiii, 473-486.—**Zahradnický** (F.) Statistika narkos. [Statistics of narcotics.] *Casop. lék. česk.*, v Praze, 1902, xli, 768; 790.







DR. J. SEARLE HURLBUT.

THE  
DENTAL COSMOS.

---

VOL. XLIV. PHILADELPHIA, DECEMBER, 1902.

---

No. 12.

ORIGINAL COMMUNICATIONS.

---

"PRESIDENT'S ADDRESS" OF THE INTERNATIONAL COMMISSION  
OF EDUCATION, AT STOCKHOLM, SWEDEN,  
AUGUST, 1902.

BY TRUMAN W. BROPHY, M.D., D.D.S., LL.D., CHICAGO, ILL.

THE beautiful capital of Sweden has opened wide her gates and most cordially welcomes our Federation and bids us God-speed in the educational work in which we are engaged, a work which leads to the highest ends in life,—the alleviation of human suffering and the promotion of the usefulness and longevity of mankind.

The distinguished honor bestowed upon us by the authorities of the ancient University of Cambridge, England, at the first general assembly of this Commission has found a counterpart in Stockholm, and the warmth of our welcome we regard as an expression of approval of our efforts in studying and familiarizing ourselves with the various systems of dental education of the countries here represented, and laboring for the elevation of our profession throughout the world. If we could, we would all speak the Swedish language to-day, to make more clear to the people of this country our appreciation of the friendship manifested toward us on our arrival in this capital city, and adequately convey to you assurances of our highest esteem.

As an American, permit me to state that the sturdy sons and daughters of Sweden whose homes are now in America, have, by their industry, integrity, and desire to excel, contributed not a little to the development of our resources and the upbuilding of our institutions.

The great work outlined by this Commission has attracted attention and found enthusiastic supporters not only among the leaders



in our institutions of professional learning, but among educators in academies, colleges, and universities throughout the world.

Sir Michael Foster, Sir James Crichton Brown, Prof. Joseph Griffiths, and Prof. Sims Woodhead, in their admirable addresses delivered in Cambridge in August, 1901, impressed upon those of us whose good fortune it was to hear them the interest that those great leaders among British professional men have taken in the work of this International Commission of Education. We shall be ever grateful to these distinguished men for their contributions to the literature of our Commission, and their cordial reception and hospitality during our stay at one of England's great seats of learning. Through these representatives of English thought along educational lines, both general and professional, we are assured of earnest support on the part of Great Britain in the work of our Federation.

The problem before our Commission is one which commands the thought of the leading educators, general as well as special, throughout the world. It is, how best to prepare a young man for his life-work. To us the question assumes the form: What course of training, preliminary as well as professional, is best adapted to the preparation of a man for a practitioner of dentistry? In answer to this question, another naturally arises: What is dentistry? It is impossible, by use of a dictionary or encyclopedia definition to fully and adequately define anything. If it were so, we would need only dictionaries and encyclopedias for the purpose of acquiring knowledge. It is but little satisfaction to one who seeks full information upon a subject to gather from the dictionary or encyclopedia all they contain about it. The most exhaustive treatises are required to convey to the mind the details and intricacies of a subject, and in the light of modern scientific investigation our views are being constantly modified to conform to newly established facts. The definition of dentistry published in the ninth revised edition of the "Encyclopedia Britannica" is as follows: "A special department of medical science, embracing the structure, function, and therapeutics of the mouth and its contained organs, together with their surgical and prosthetic treatment."

The above definition is, no doubt, as complete as any yet formulated and published in the English language. It by no means, however, covers the subject, nor conveys to the mind the full scope of the duties of a dental practitioner. Dentistry requires a broader definition than that. Strictly speaking, medical science constitutes but a small part of the modern dental curriculum. No one more highly appreciates than do I the medical school and its broadened course of study. Having myself earned my degree of M.D., on completing three courses of medical lectures and instruction, and holding a professorship in one of the leading medical colleges in America, which position I have filled for the past twenty years, and associated in hospital and college work with some of the most distinguished physicians and surgeons in the city in which I live, I feel that I can without bias express an opinion, and am able to fairly discuss the relations of medical to dental teaching. I do not

hesitate to state that medicine is not a science. It is based in part upon certain departments of different sciences, and in part upon empiricism. Medicine is described as “the healing art in all its branches.” If medicine were “the healing art in all its branches,” it must necessarily include the medical and surgical departments of dentistry, besides the management and care of dental irregularities and dento-facial deformities. It is too well known to require discussion that medical schools, with few exceptions, do not teach the minute anatomy and pathology of the teeth and the tissues associated therewith. It has been observed by all of you that serious errors in diagnosis and treatment are not infrequently due to a lack of knowledge on the part of medical practitioners of the lesions of the teeth and maladies caused thereby. The schools of medicine stand more in need of thorough work in the teaching of dental anatomy, pathology, and therapeutics, and the surgical diseases and injuries dependent upon dental lesions and the treatment of fractures and other injuries of the jaws, and oral hygiene, than does the modern dental college of any of the teaching offered in the schools of medicine. The professional man of these days becomes so absorbed in the development, breadth, and magnitude of his own profession that he is, in many instances, unconscious of the rapid advancement which other professions are making, and the expansion of their curricula and their usefulness.

The leaders in educational work, both general and professional, —excepting, of course, professors in dental colleges,—have but a meager knowledge of what dentistry is, and what the varied and difficult duties of the dental practitioner are, while many people of culture, people well informed on almost all subjects, have only the most crude ideas of dentistry and dental practice. There is no vocation which calls for a broader knowledge than does dentistry, reaching out, as it does, and claiming from the arts and sciences their choicest products and appropriating them to its use.

Dentistry is not so much a department of medicine as many who have not weighed well the subject would have us think. Custom often makes mental impressions which logic removes with difficulty.

There are certain branches of learning which are sciences *per se*, parts of which are essential in the laying of a foundation for the study of medicine, but they are not by any means exclusive branches of medicine. These sciences must be studied by men in other professions than medicine, that the student may understand the principles underlying his vocation. The pharmacist must know chemistry, both organic and inorganic. The engineer must understand physics, and the laws governing the application of force. The sculptor must know the outlines of anatomy or his work will be a failure. The naturalist must be well grounded in physiology as the foundation upon which his profession rests.

“*Biology* is a science which treats of the nature and properties of living matter and of living beings.”

“*Physics* is a study of the phenomena of bodies and of the forces acting upon them, excluding those acting on atoms, which pertain to chemistry.”

"*Chemistry* is the science treating of the mutual interaction of elements and of their compounds. The art of identifying or ascertaining the composition of substances presented for analysis."

"*Physiology* is the doctrine of the vital phenomena of organisms and their relation to chemical and physical laws."

"*Anatomy* is the science treating of the structure of organized bodies, it may be vegetable, animal, or human."

These sciences are not medical, nor are they, in the broadest sense, departments of medicine. Mathematics is employed in medical teaching and practice, but no one would claim that this science is a department of medicine. Medicine extracts from them as much as is required to prepare her students for the duties of practitioners. The dental colleges, likewise, draw from the arts and sciences named, and employ the knowledge thus acquired in building and developing the student into the skillful, successful practitioner.

Dentistry is a profession embracing—

(1) A knowledge of physics, chemistry, anatomy, histology, metallurgy, physiology and bacteriology.

(2) Its practice requires a high degree of digital skill, manual dexterity and technology, and an accurate knowledge of mechanical principles and the fundamental laws upon which they are based.

(3) A thorough knowledge of the physical and chemical properties of all the minerals and metals, and their various dental uses.

(4) A knowledge of materia medica, therapeutics, general and special pathology, physical diagnosis, and principles of surgery and oral surgery.

(5) Operative and prosthetic dentistry and orthodontia.

Under these five heads it will be seen that the strictly medical subjects are included in No. 4.

It is fair to state that dentistry is divided into five parts for consideration and study, one of which parts is medical. Whoever would attain the highest degree of success in the dental profession must keep in mind the necessity of being well grounded in the sciences named, or as much of them as underlie the principles and practice of dentistry.

To give an adequate idea of the scope of instruction in modern dental education, the following brief outline of subjects and arrangement of curriculum is herewith presented, as typical of that pursued by the high-grade institutions of dental learning:

#### ANATOMY.

In the freshman year the course consists of the anatomy of the bones, ligaments, muscles, and viscera. In this department three lectures are given each week, each being illustrated in the most practical manner on a cadaver, manikins, plates, or blackboard. Each student makes a complete dissection of one lower extremity, and completes this work the first year.

In the junior or second year the course consists in a study of the anatomy of the arteries, veins, lymphatics, nerves, and organs of special sense. The latter are prominently dwelt upon. The



above studies, with a complete dissection of one upper extremity, during this the junior year, thus completing a dissection of the entire body, finishes the work in anatomy.

#### PHYSIOLOGY.

The course in physiology comprises the subject as taught in recognized medical colleges, and extends over the first and second years. During the first year two lectures, with stereopticon illustrations and demonstrations, and one recitation, are given each week. For recitation work the class is divided into sections of such size that every member of the class may recite each week.

In the freshman year the subjects considered are phenomena of cell life, blood circulation, respiration, chemical composition of the body, food, digestion, absorption, excretion, metabolism, animal heat, diet and nutrition, production of the voice, etc.

This work is completed in the freshman year.

In the junior year the work comprises the nervous system and the senses, and is completed in this year. The physiology of the entire nervous system is given, thus laying the foundation for the best understanding of such special parts as cranial nerves.

#### PHYSICS AND CHEMISTRY.

The course in chemistry is both theoretical and practical. The lectures are delivered always in connection with demonstrations of the subject under consideration. The course is continued throughout both the freshman and junior years. During the freshman year the elements of inorganic chemistry receive attention, in connection with the study of the non-metals.

The junior year embraces the chemistry of the metals, metallurgy, organic chemistry, and special chemical topics of interest to the practical dentist.

The work in the chemical laboratory is continued from the beginning throughout both years. Besides much that is experimental, the student is taught to make chemical analyses of urine, saliva, and other physiological products.

The work in physics consists in lectures and demonstrations in physics, dealing in a practical way with the principles of mechanics, heat, light, and electricity, especially employed in dental processes.

#### HISTOLOGY.

This course embraces both normal and pathological histology. The freshmen receive one lecture a week on the microscopical structure of normal tissues. In addition to this they have a special course in the laboratory, in the staining and mounting of specimens, and their study under the microscope. In this course all the tissues of the human body are carefully studied.

In the junior year pathological tissues are studied, as well as the histological structure of tumors.

The students stain and mount their own specimens, as in the freshman year. This work is completed in the junior year.

#### DENTAL PATHOLOGY, MORBID AND COMPARATIVE ANATOMY.

In this department the student is taught not only the anatomy of

the human teeth, but their homologies as well. The general subject of dentition in all the orders of animals is considered, and the scientific as well as the practical aspect presented, comprising, in the freshman year, dental anatomy, and, in the junior year, comparative anatomy, each study being completed at the end of the year. The course of lectures in this department is illustrated by a large collection of skulls and dentitions, representing all the principal orders of the vertebrate world, also by stereopticon.

In the senior year the lectures in pathological anatomy cover the abnormalities and morbid growths found in the oral cavity. In general pathology they will include the infantile disturbances at the time of dentition, together with the tissue changes. These are illustrated by prepared specimens, and by numerous diagrams and charts.

General and local anesthesia are taught by special lectures and illustrated by vivisections and experiments upon living animals, to show the tissues and organs affected, and the changes during the anesthetic stage. All the principal functions of the animal body are exhibited in full action by a series of painless experiments upon different classes of animals.

The aim is to ground the student in the basal principles upon which an intelligent and broad practice must be founded.

#### BACTERIOLOGY.

In the senior year practical bacteriology forms a required course. The study of bacteriology is inseparably connected with that of dentistry. The mouth is the great center of infection; every carious tooth is a culture tube in which bacteria are grown, and by way of the alimentary tract or by direct absorption exert toxic influences upon the whole organism. It is, indeed, through a more intimate acquaintance with the biological activity of the unicellular vegetable micro-organisms that modern hygiene has attained the prominence and importance now justly accorded it. There is no longer any doubt that certain low forms of vegetable life cause certain diseases, it having been proved with the accuracy of scientific demonstration.

The object of this course is to make the student perfectly familiar with the methods of detection, isolation and identification of the pathogenic micro-organisms. The work consists of (1) the preparation of the various culture media, the sterilization of same by steam; (2) the sterilization of the articles of glass, iron, etc., that may be used, by dry heat; (3) the growth and identification of non-pathogenic organisms on the media; (4) the study, growth, and classification of the most common forms of pathogenic organisms, the study of dental caries, both natural and artificial, and the sterilization of instruments.

#### MATERIA MEDICA AND THERAPEUTICS.

In the freshman year the study of materia medica and therapeutics is taught by recitations once a week, the class being divided into sections for that purpose.

In the junior year didactic and clinical lectures and demonstrations will be given to the class each week.

In the final, or third, year the seniors will have two lectures per week in advanced therapeutics, and demonstrations in clinical therapeutics, following the teaching of the chair in this department. All of the teaching is based on a series of consecutive steps in organic and inorganic materia medica, first, and secondly the exhibition of the action of drugs, both constitutionally and locally, with the dosage, properties, and local and constitutional effects on the human body. All new modes of treatment are fully demonstrated, and a short summary of toxicology is dwelt upon at the close of the course of lectures.

#### INSTRUCTION IN DENTAL PROSTHESIS AND ART.

In this department the teaching embraces both didactic and practical instruction in the mechanical and artistic construction of all of the various approved methods of restoring impaired, and substituting lost, dental organs.

Special reference is made to the broad field of possibilities, and to the principles involved in restoring the features of the face, and impaired normal functions; and to the laws governing the articulation and occlusion of the teeth.

Continuous gum, swaged and cast metal vulcanite and celluloid dentures; interdental splints and the mechanical treatment of maxillary fractures, obturators and artificial vela, and crown- and bridge-work in gold and porcelain, each receives the attention which its prominence demands.

#### PROSTHETIC TECHNIQS.

The prescribed course in prosthetic technics extends through the freshman and junior years, and covers thorough, practical, and theoretical training in the technique of dental prosthesis. It embraces in detail the experimental construction of all of the various forms of artificial dentures and appliances now in use, including the taking of impressions and manipulation of the different materials used; the arrangement of artificial teeth, and the construction of dentures on bases of platinum, gold, swaged and cast aluminum, fusible alloys, and vulcanite; crown- and bridge-work of every approved method in metal and porcelain; metallurgy, the art of soldering, characteristics of the various metals used, and the compounding of solders, alloys, fluxes, etc.; porcelain work in every phase of its application, including continuous-gum work, crown- and bridge-work, the use of the various furnaces, etc.

Realizing the importance of a thorough practical training, special efforts are made to make this course complete in every detail, thus giving the student ample opportunities and facilities for acquiring manipulative ability and familiarizing himself with the underlying principles of modern dental prosthesis.

#### ORTHODONTIA.

In the department of orthodontia, the modern methods of correcting irregularities of the teeth and dento-facial deformities are taught. Special attention is given to the fundamental principles of applied force in all its relations to orthodontia. In the junior



year the preparation of material, construction of regulating apparatus and mechanical technics are taught. In the senior year the practical application and management of regulating appliances are demonstrated in the infirmary.

The didactic instruction in this department is amply illustrated by models, appliances, drawings, etc., from cases in practice, showing every variety of dental and facial irregularity.

#### OPERATIVE DENTISTRY.

A study of the forms of the teeth, and training in the discrimination of the individual characteristics of different classes of human teeth; a study of the forms of pulp-chambers and root-canals, in comparison with the outward forms of the crowns of the teeth, each member of the class being provided with teeth for this purpose; a special training in cutting the teeth, in which students are made practically acquainted with the physical qualities of dentin and enamel, and the best means of forming cavities; also studies of the enamel, its prisms, and direction of cleavage on different parts of the crowns of the several teeth, with special reference to the best form and finish of margins of cavities for filling; a study of the manner and means for opening pulp-chambers in the several teeth in order to make the best exposure of the root-canals for the purpose of removing pulps; cleaning and filling; also practice in filling root-canals out of the mouth, followed by examination of results; a study of the various cements and amalgams, their composition, quality, and manipulation; a study of the physical qualities of gold as a filling material; of its manipulation in the non-cohesive and in the cohesive state, and of its welding property, and the condition of that property's development and maintenance; practice in filling, with after-tests for leakage, etc.

The course embraces in an experimental way the manipulation of all the materials-used in filling teeth.

Instruction is given in the care and use of instruments, together with a study of their forms. Practice in instrument-making is included in this course, by means of which familiarity with the various classes of dental instruments is acquired.

In the department of operative dentistry the object is to develop the subject in a logical sequence, from the fundamental principles in the freshman year up to the practical details of a general office practice in the senior year. The practical application in the infirmary of the theories taught in the lecture room is insisted on, and a large part of the senior lecture course consists in a study of the various defects and mistakes made by the students in their infirmary work, to the end that the failures incident to a beginner may be corrected in college before the applicant presents himself to the public for patronage. Toward the close of the senior year, the student in his infirmary practice is expected to study each case that is presented, and in his own mind must decide as to the proper procedures to follow. After he has reached this decision, he must call an instructor and state the result of his deliberations. His decision is then affirmed or corrected. This is done for the purpose of developing in the student the habit of individual study of his

case, and also to teach him to exercise his own judgment, instead of always relying on the judgment of others.

A very thorough course of instruction is given in porcelain inlays. The advantages and limitations of inlays in general, and the indications for porcelain and for gold inlays, together with their manufacture, receives detailed and careful consideration. A true conception of the possibilities of inlays is necessary for the advanced dental practitioner of to-day, and this fact is recognized and met in the most practical manner in this course.

Operative technics in the freshman year is given in suitably formed classes under a special instructor, and its object is to give students an intimate knowledge of the tissues upon which they are to operate, of the physical qualities and adaptations of the materials used, and facility in the use of instruments by systematized practice upon teeth out of the mouth.

#### PHYSICAL DIAGNOSIS.

With the progress that has been made in all departments of the practice of dentistry, it becomes not only desirable, but necessary, that the practicing dentist should be able, not only to make such an examination of his patient as may enable him to determine as to the advisability of the use of an anesthetic, but he should also know the conditions which should influence him in the selection of an anesthetic for each individual case.

This, with a knowledge of the physiological action of the individual anesthetics, and the proper remedies and procedure to be resorted to in case of threatened or actual failure of the vital functions, will prepare the anesthetist to take such care of his patient as the nature of the case may require.

#### ORAL SURGERY.

In the senior year a course is given in oral surgery, both didactic and clinical, embracing the discussion and presentation of surgical diseases, as well as the underlying principles of surgical practice. At the surgical clinic, which is very large and replete with interesting cases, a variety of operations are performed in the presence of the class.

It is thus we briefly outline and summarize, without entering into detail, the studies which must be pursued to prepare the student to enter upon the duties of his profession.

When and in what environment can the student best acquire this knowledge? My answer is: In the dental college which has been organized, equipped, and conducted solely as a dental college or dental department of a university. Much has been said in America, as well as in Europe, on the subject of qualification of dental practitioners for admission to practice. At a meeting in London, in August, 1901, a distinguished physician, president of the Royal College of Surgeons (Eng.) remarked that a few of those who became licentiates in dentistry, L.D.S., subsequently sought the higher qualification,—the qualification represented by the degree of M.R.C.S.

It is impossible for a dentist to receive a higher qualification in the form of credentials for proficiency and skill as a practitioner of dentistry than to have finished the long course of training in the dental college, which has enabled him to receive the highest qualification that the most proficient and distinguished educators in his profession can bestow.

In striking contrast with President ——'s views are those expressed by Prof. Joseph Griffiths, chief surgeon of the medical department of Cambridge University. In an address delivered to this body, August, 1901, he says:

"Mechanical training has, indeed, been neglected in the education of a surgeon, and hence it is that we often deplore the mechanical knowledge, and the reasoning built upon its deficiency as displayed even by surgeons of repute."

"A mechanical training of the best kind is essential to the dentist, and must form the basis of his future work. I would, therefore, strongly urge you not to imitate the education of the medical student, but to continue on the lines which will train a dentist for his own profession from first to last, and to have a single purpose in view and endeavor to obtain a definite result. Do not try to make a medical man a dentist, but let a dentist start and finish as such.

"Can this education be carried on side by side with that of the medical man, is the question of practical importance. I would unhesitatingly answer, No! The anatomist may train either, but he cannot train both together without giving one much more than he requires, and not paying enough attention to the other. It is much the same with physiology; therefore I say that their courses should be separate and so arranged as to serve the right end. In physics and chemistry the same training might serve; in study of disease, No. Is such a course of study proper for a university to undertake? In my humble opinion it is, and should be, for the work of the dentist is as honorable and as worthy of respect as that of any of the older professions, and I trust that the newer universities will take this line and have an avenue for dental students to obtain a university degree side by side with the medical student. But I also trust that the authorities will let dentistry and medicine be free to develop along those lines which each finds best suited for its own progress.

"Although dentistry was once an intimate part of the medical art, it can hardly be so again, for its elevation has been so complete that it now forms a separate division of the art of healing. It is, I venture to think, a child of the old stock, destined to continue an independent existence, and to work out its own salvation."

Such are the words of Professor Griffiths, whose views are so clearly presented, and so perfectly agree with the following words of the late Dr. Oliver Wendell Holmes, spoken in response to a toast at a banquet of the Odontological Society of New York: "The dental profession has established and prolonged the reign of beauty. It has taken from old age its most unwelcome feature, and rendered enjoyable human life far beyond the limit of the years



when the purblind patriarch might well exclaim, ‘I have no pleasure in them!’”

In American universities experience has proved that the interests of both medical and dental students are best subserved by teaching them in separate classes.

The civil engineer could not receive a higher qualification in the form of credentials than articles testimonial from a high grade school of technology or engineering. So with dentistry; it has established its standard of qualification; the modern dental college curriculum enables the student to comply with all of the requirements which will eminently qualify him for the varied, complicated, and grave responsibilities of a dental practitioner, and there is no higher standard of qualification of proficiency for him as a dentist known to mankind.

As a sequence to the foregoing statements, we reach the following conclusions:

Dentistry is a profession *per se*, not a fraction of one. The art of dentistry embracing the chief part of the dentist’s work is not taught in schools of medicine; consequently medical men who have not had special training in dentistry are not by education or practical experience best qualified to act upon boards of examiners, to judge of the qualifications of candidates for admission to dental practice. Moreover, it is, I believe, through a misconception on the part of those in authority of the magnitude and intricacies of the many departments of dentistry that medical faculties and medical boards are delegated to determine as to whether dental students are sufficiently educated and skillful to enter upon practice.

The time will surely come when the leaders among the dentists of the world, in their respective countries, will through their dental faculties, educate the men who are to be practicing dentists, and pass upon their qualifications, subsequently to be examined and licensed by a dental board appointed by the government for that purpose, with whose requirements the applicants must comply.

We are not so weak that it is necessary to call upon another profession to assume our responsibilities, or to vouch for our reputations, or to assure the people of our proficiency as professional men.

The last great International Dental Congress held in Paris was an index of the power of the dental profession and the dental press. That congress was not a fraction of a congress; it was a *whole number*. It was strong. That congress created this International Federation.

The fraction of the Medical Congress, the dental section, which was in session at the same time, was not largely attended; it was not strong. So with dental education. The dental institution organized and controlled by dentists accomplishes the best results and achieves the highest success. The dental institution organized by a medical faculty as a section, annex, fraction, or department of a medical college, and controlled by the medical faculty, who assume that a physician is almost a dentist, too frequently fails to accomplish satisfactory work.

Let us, then, unhesitatingly perform our duty to ourselves, our profession, and the people who seek our services. Let us assume the whole responsibility of properly training young men in the science and art of dentistry.

---

## AN ANSWER TO DR. HOFHEINZ.

BY DR. E. K. WEDELSTAEDT, ST. PAUL, MINN.

ON pages 914 and 915 of the DENTAL COSMOS for September, 1902, can be found the following: "Several decades ago Drs. Varney and Webb practiced and taught what Dr. Black has so happily termed 'extension for prevention.' . . . Dr. Webb, however, applied this theory to contour work only. He took the same infinite pains to fill a one- or two-millimeter cavity on an approximal surface of a bicuspid or molar that he bestowed upon the large contour fillings. Drs. Webb and Varney recognized the mechanical and chemical necessity of excavating in such cases to the utmost limit. Dr. Black, with his microscopic vision and scientific mind, has applied the theory to approximal cavities of minor size. He has, however, nowhere requested us to cut a cavity of one or two millimeters into one of five or six, to prevent recurrence of decay, regardless of conditions, as some of his followers have done. . . . What is 'extension for prevention'? The extension of cavity margins toward the areas that are self-cleansing or are protected by gum tissue. . . .

"There can be no question in the mind of any intelligent and observing operator that the large approximal gold fillings have a greater longevity than the smaller ones under precisely the same conditions. What remains for us to definitely decide, when a case presents itself, is this: How much extension for prevention is justified?—how much must we cut for the real benefit of the tooth, how much for theory? To extend the smallest, say one-millimeter, cavity into one of seven by five, gingivally (bicuspids), in all cases, would mean the sacrifice in dentistry of conservatism, which, to say the least, is the foundation of real and sound progress."

Under some circumstances what is above quoted would call forth a most vigorous protest, but the circumstances are ordinary, and therefore an effort will be made to state with more clearness my own position regarding "extension for prevention." Before doing this let me say that not hundreds, but thousands of practitioners who have heard me lecture on this subject and on the necessity for giving every consideration to "extension for prevention" methods provided they wished to progress, will remember that I have always said: "No two operations are alike. Every case is a law unto itself; that which will answer in one case will not do at all in another. We all know that in the upper jaw we do not often find the same conditions existing on the two sides of the same mouth. More often than not entirely dissimilar conditions exist among bicuspids and molars in the same jaw and on the same

side. As we increase our knowledge and make a more careful study of the conditions with which we deal, we learn to differentiate between conditions. The ability to deal intelligently with them and to differentiate between them marks the difference between the successful and the unsuccessful practitioner." For years these have been my teachings, and the reader can compare them with what has been quoted from the essay of Dr. Hofheinz.

Each man has his own little world in which he dwells, and this little world is his life. The more attention he gives certain subjects the more he finds out about them. His knowledge, however, regarding these subjects is increased and broadened as he goes out and compares what he has obtained with the knowledge that has been obtained by others who are working along similar lines. If he does not compare his knowledge with that of others he has only vague ideas regarding the knowledge which these others may possess of a subject which he may feel he knows all about. Dr. Hofheinz shows by his written thoughts and their ambiguity that he is wholly unfamiliar with the ideas and methods, as well as the teachings, of the followers of the renowned Black. Did he go out among these men and see what was going on, I feel very certain that it would be an impossibility for him to place such misconstruction on the fundamental principles to which he has called attention. I do not like to say that he has a misapprehension of certain things, neither do I wish to say many things which I should say and which his essay justly merits. I will, however, say this, and say it also in all charity: It is lamentable that the man so thoroughly misunderstands the situation.

If he will but journey out here and spend a week with Dr. Searl at Owatonna, or the same length of time with Dr. Fee at West Superior, he will, on returning to his home, retract everything said in his essay about what the followers of the renowned Black are doing in teaching erroneous methods. Nor is this all. He will be so impressed with the earnestness of either of these men, the high standard of their operations, their great skill, ability, etc., that he will be as enthusiastic a follower of the Black methods as are thousands of others. If such is not the case, he has but to send me his expense account and it will be paid. The two men named I have purposely picked out, for they are, and for some time past have been, doing everything possible to interest others in the advanced methods. They are, however, not the only men in this Northwest who are following methods which Dr. Hofheinz seems to know little about. There are twenty-five or thirty other operators who are very familiar with the Black methods and who could also interest any number of men in what we in the West term "advanced methods."

For the past thirty years there has been constant complaint made about the failure of fillings. Cause after cause has been assigned for these many failures. It has been a notable fact that these complaints came from men of great skill and ability, as well as from those not possessing these attributes. It was noticed that what were termed "small" fillings, when placed in the approximal



surfaces, rarely preserve the teeth for any considerable length of time. But where "large" fillings were made the fillings remained and preserved the teeth. It was so in the time of Varney and Webb, and it is so to-day. Naturally, then, What is meant by these terms "small" and "large"? A "small" filling is one that is made in a cavity in the approximal surface the gingival margin of which does not extend under a healthy gum septum, the lingual and buccal margins of which cannot be kept clean by the tooth-brush, action of the lips, tongue, cheek, excursions of food, etc. A "large" filling is one that is made in the cavity of an approximal surface, the gingival margin of which is as a rule covered with a healthy gum septum, and the lingual and buccal margins of which can readily be kept clean by the tooth-brush, excursions of food, etc.

This definition of a "large" filling does not mean that in preparing the cavity two-thirds of the approximal surface must be removed in every case to obtain the desired result. It means that the conditions surrounding each case that is treated must be given every consideration. As these different cases are studied we quickly learn to differentiate, for we find that in some cases a trifle over one-half of the thickness of the tooth, linguo-buccally, will place the cavity margins in localities that we call self-cleansing. In other cases under different conditions the lingual and buccal margins must be extended still farther. They should always be extended (provided there is an adjoining tooth in position and a permanent operation is being made) so that the lingual and buccal margins are past all contact with the adjoining tooth. In other words, on looking from the median line, lingually, at a prepared mesial cavity in the approximal surface of a molar, the entire lingual margin, from the occlusal to the gingival, should be plainly visible. And on looking at the buccal margin from the canine eminence, the entire buccal margin from the occlusal to the gingival should be plainly visible. The placing of the lingual and buccal cavity margins in the positions just mentioned may mean a two-thirds rule preparation and it may not. It depends wholly on the position and contact of the tooth which stands to the mesial of the molar, the extent of the decay in the mesial surface of that molar, and whether a temporary or a permanent operation is being made. These different things govern the cavity preparation. Where the margins are extended, as has been stated, every step of the operation from the preparation of the cavity to the final finishing of the filling is more easily, more expeditiously, and more thoroughly made. All this I stated many years ago, and all men of intelligence know how true it is.

*Why small fillings placed in the approximal surfaces fail.* Until Dr. J. Leon Williams gave us a practical demonstration of the microbic plaques *in situ*, with the exception of a few men like Dr. Black and his co-workers the men in the profession were unaware of the existence of such things. Dr. Williams pointed out the existence of certain conditions which assisted in bringing about opportunities for teeth to decay. Let us look at this matter in a

different light. Suppose in the mouth of a patient who is susceptible to decay we find in an upper right first molar, ten millimeters thick linguo-buccally, a cavity of decay in the mesial surface. (The adjacent second bicuspid is in position and is normally situated.) Suppose that after the cavity is prepared it will measure three millimeters from the bucco-cavo-surface angle to the linguo-cavo-surface angle. Suppose that the operation which followed has been as perfectly made as it can be in such a cavity. Will there be recurrence of decay? Will that filling fail? If the patient lives and that adjacent bicuspid remains in position that filling will fail. It will fail for the simple reason that the conditions which led to the first decay were not sufficiently altered to stamp out the disease when the operation was made. The same conditions which led to the first decay were left *in situ*, so that decay must as a natural result follow. We may as well compare the case to one of appendicitis, in which the surgeon makes a laparotomy but does not remove the appendix. Does the making of the laparotomy effect a cure for appendicitis? It may palliate the conditions for a while, but if the patient is subjected to constant attacks of the disease, better remove the appendix at once and do away with the cause of the trouble. The man is never safe until this is done. Neither is the approximal surface of any tooth which is decayed safe until that which led to the original decay is entirely removed.

An objection may be raised to the removal of the cause which led to the first decay. Small fillings may be pointed to that have been in position for ten, fifteen, or even twenty years and are still preserving the teeth. Occasionally I see such fillings in the teeth of some of my patients, but those teeth would have been preserved just as well if they had never been filled, and there is yet time for the fillings to fail. We should not think so much of the few successful cases of this kind, for we know that they are the exceptions. It is far better for us to take the vast majority of failures and let them govern our operative procedure, as well as our sentiments, than it is to allow the few exceptions to be the law on which we base our judgment. And we know that out of one thousand failures of what are supposed to be perfectly made and anchored fillings in the approximal surfaces, nine hundred and ninety-nine are what can be called small fillings; and their failure is due wholly to not making a proper alteration in the parts so that the conditions which led to the first disease were entirely removed when the operations were made. That, I feel, is the reason why small fillings fail.

Large fillings when placed in the approximal surfaces, provided they are properly made and anchored, may occasionally fail, but they should never fail on account of non-removal of the cause which led to the first decay. I have seen many large fillings which have preserved the teeth for thirty, forty, and in some cases for over fifty years. I wish that I could say this much for small fillings. Dr. Hofheinz recognizes this fact. Then why assail a theory which has for its end the raising of the standard of our

profession, interesting men in being of greater worth to humanity, etc. I should think it would be far better to assist the few in their efforts to build up than to help the great majority in their efforts to tear down. I shall return to this subject in just a moment.

On re-reading what has been quoted from the essay of Dr. Hofheinz I prepared an answer to the same. After this had been very hastily written, one of my friends visited me and the essay as published in the journal was handed my friend to read. After he had read it I asked him what was meant by a "one- or two-millimeter cavity in the approximal surface of a bicuspid or molar." He answered that he was a layman and unfamiliar with many of the things contained in the essay, but he was under the impression that it meant the original size of the cavity as it came for treatment. I had supposed that the size mentioned meant the cavity when ready for the filling material, and on the latter assumption had prepared the essay. The answer which my friend gave caused me to re-write my essay. An argument cannot be made regarding the size of the cavity as mentioned in the two paragraphs, for the language is so ambiguous that neither head nor tail can be made of it. I am perfectly willing to discuss this or any other subject, provided I know what is meant. If he means initial penetration, then there is much to say. If the size of the prepared cavity be meant, why then there is something to say also. Until something definite is said I cannot discuss that particular part of the subject.

In discussing any scientific subject the least men can do is to be explicit and exact in their statements. Where this is done those who may hold dissimilar views know precisely what the writer or speaker means. Otherwise the subject cannot be considered without more or less uncertainty. For example, the essayist says, "To extend the smallest, say one-millimeter, cavity into one of seven by five gingivally (bicuspids) in all cases," etc. What are we to conclude from this? That the prepared cavity is one millimeter in diameter, or is this the size linguo-buccally?—or gingivo-occlusally? Or does it mean that the cavity penetrates into the tooth to that extent? Or does it mean the size of the cavity prior to being operated on? What is to be inferred from his statement? Statements like the one just quoted are too vague to be understood. The essayist also says, "He has, however, nowhere requested us to cut a cavity of one or two millimeters into one of five or six, to prevent recurrence of decay, regardless of conditions, as some of his followers have done." I shall be very grateful for the evidence on which the above assertion is made. And I shall be still more grateful for an explanation of the ideas contained in the above quotation. Is a prepared cavity of the size mentioned supposed to be dealt with? Or is that initial penetration? I do not grasp what is meant.

There is another side to the discussion of this subject to which few men seem to give the least consideration; and that is the moral side. Let me give an example of what I mean. Let us suppose Dr. Hofheinz is a surgeon, and that for twenty years he



had done all possible toward perfecting himself in his specialty. Suppose that for six or seven years he had tried to instill into others the necessity for making greater use of the knowledge which during fifteen years had been developed. Suppose in his writings he cited as an example the general carelessness displayed by too many operators in making laparotomies, and should say in substance, "In making laparotomies remember that no two cases are alike. Cut and continue to cut until you have a change in the conditions. This may mean that you will be compelled to open the patient from the pubes to the thorax. But that does not make any difference. Open the patient to this extent provided it is necessary; you then know that you have made a change in the conditions, and that the disease is stamped out. Remember, if you do not make this change in the conditions, if you do not remove the cause which led to the disease, your operation is only a temporary expedient which sooner or later must be made again by somebody with more skill and knowledge." Let us suppose that I am a surgeon also. I read his thoughts, and then write an essay, in which is said, "Here is a man who, when he comes to making a simple laparotomy, ignores every condition and deliberately opens all those for whom he operates from the pubes to the thorax."

Now, I should like to know how Dr. Hofheinz would feel if he received any such treatment as that, especially when he was doing everything possible to interest others in making better surgical operations. It does seem to me that it is about time for men to stop doing some things, and among these things is this matter of finding fault with those who believe in "extension for prevention" methods and their rational application. If I did not feel that an essay of mine would be the means of assisting others to give greater consideration to scientific dentistry, my pencil would remain dull for all time and eternity. I do not believe in being iconoclastic to such an extent that the idols of all others must come down and only mine be worshipped. I do, however, believe that if a little more time, study, and particularly attention, were given the fundamental principles, there would be much more good done to humanity, and essays like this of my friend would very quickly become a thing of the past.

In conclusion let me say that I am unalterably opposed to making abnormally large fillings unless the conditions demand it. I am at all times absolutely opposed to the indiscriminate methods which some call "extension for prevention." I believe in the judicious application of "extension for prevention" methods. Their judicious application to me does not mean that an operator is justified where dealing with a simple cavity in the mesial surface of a molar in making a cavity which extends from the buccal groove to the lingual groove, more especially when a simple cavity preparation would be all that is necessary. No man in the dental profession loathes so absolutely unnecessary destruction of tooth-substance. The block on which altogether too many operators stumble is, How much is necessary? This knowledge is obtained only by a most careful and painstaking study of the different con-

ditions with which we deal. If a man will not study conditions he cannot differentiate between them, and he will never know what "extension for prevention" means.

I am absolutely opposed to this matter of not making use of the knowledge which has been developed for us. I do not believe that Dr. R. W. Varney, who died in 1872, or Dr. M. H. Webb, who died in 1882, knew as much as Dr. Hofheinz knows, provided the last-named is familiar with the knowledge that has been developed during the past fifteen years. Since the death of the first two named we have learned something definite, whereas twenty years ago altogether too many things were enveloped in darkness. We now know certain things to be so; then, for goodness' sake, let us develop them, and not stand in their way by forever dealing with the past history of dentistry. Our one great trouble is our entire satisfaction with ourselves and the teachings of the past. The physicians and surgeons have far outstripped us on account of their unwillingness to be satisfied. They are constantly dissatisfied and are seeking for better things, while too many men in the dental profession are trying to crush the utterances of the few who are doing everything possible to interest others in the advanced methods. It is time,—long past time, too,—to stop and carefully consider this matter, and then help the few push along all that is good and help make it better.

At the present time I am too busy to say more on this subject. As it is, this essay has been written with altogether too much haste.

The more we study decay of the human teeth, the more impressed we become with the necessity for applying the "extension for prevention" methods. And as we become familiar with the conditions which bring about decay around the margins of small fillings made in the proximal surfaces, the more we recognize the value of applying "extension for prevention" methods. It is only through their rational application that we as a profession can progress. The sooner this fact is recognized by all, the better it will be for dentists and patients.

---

## THE BUILDING OF CONTOUR AMALGAM FILLINGS IN MOLAR TEETH.

BY CHAS. E. PEARSON, D.D.S., L.D.S., TORONTO, CANADA.

(Read at the thirty-fourth annual union convention of the Seventh and Eighth District Dental Societies, Buffalo, October 28, 1902.)

**I**N undertaking to prepare a paper upon this subject I have but one object in view,—to advocate strongly the restoration of molar teeth by the use of amalgam fillings rather than by the use of gold crowns.

Such an object would naturally give rise to the questions, What are the objections to gold crowns on molars? and, How badly may a tooth be decayed before it is impossible to restore it by means of an amalgam filling?

Let me answer the latter question first, by stating that so long as the roots of a molar are intact and in such a state of health as to warrant the retention of that tooth in the mouth, it may be restored to usefulness by an amalgam filling.

This may be considered a very sweeping statement,—a statement which practically eliminates the use of crowns on molar teeth; a statement so extreme that many may say it is wanting in good judgment. But if it can be demonstrated that contour amalgam fillings may be placed on roots which are otherwise consigned to the forceps, then, I take it, this paper has not been written in vain. And it is only by taking such an extreme case as a basis of demonstration and argument—leaving out for the present the question of good judgment—that we may arrive at the real value of the filling and the great abuse of the gold crown.

To make the case concrete let us take a lower first molar on the right side. There are no walls left above the gum. The gum has overlapped the margins and must be forced away by a gutta-percha plug. The pulp has gone and the outline of the pulp-chamber has disappeared,—there is, in fact, nothing left but the saucer-shaped surface with the open mouths of the canals. What is to be done? There is a fistula on the gum. Is the root worth saving? Provided the abscess heals there is no doubt as to the advisability of saving the tooth. The question is, how?

A recent writer on crown- and bridge-work has laid down as an axiom that all teeth which are decayed below the gum margin should have that lost portion restored with amalgam before the crown is placed.

Arguing from this it would become necessary in the case before us to enlarge the canals and to insert and cement screw-posts of iridio-platinum wire in order firmly to retain the amalgam which would restore the decayed portion of the crown. Probably the lower third or half of the tooth would be built up with amalgam to form a base to which a band might be fitted and retained. In order to obtain sufficient pressure to condense the amalgam a matrix band must be used. When the matrix is removed an instrument is used to true and flush the filling with the tooth below the gum so that the gum would return to its normal benign condition. A crown is then made, probably from an impression in plaster—or worse. It is filled with cement and jammed home with the thumb. It does not much matter how far below the gum margin the sharp borders of the crown sink or how much cement may escape to irritate the soft tissue. Of course the borders are always burnished closely to the amalgam and any surplus cement is removed; but nevertheless the tooth is sore for weeks, and in a few years the gum has receded, pyorrhea has loosened the tooth, and instead of being a useful organ it is a nidus for micro-organisms; and all because that gold crown formed a lodgment under the gum for particles of food and decaying matter. This is the usual practice in such cases. It is true they do not all invariably end as I have pictured this, for we do not all invariably jam a crown home with the thumb, and some of us are always careful to have a thin, bur-



nishable border to a crown which does actually fit as well as man can make it fit; but the percentage of crowns which do cause trouble under the gum is very large.

However, the point I wish to make is this: That the screw-posts and amalgam are the actual preservers of that tooth, and are the sole support for the gold crown. Then, why not make the matrix of such a form that a complete contour amalgam filling may be built which will do away with the necessity for the gold cap?

In this way the contact points may be restored, and the cusps built up. It may be done with greater rapidity; it may be polished as smoothly; it will be as strong; it will cause no greater pain; it is done at a single sitting; it is worth as much to the patient, and (if you wish) may cost him less, though the service is worth quite as much, and in the end, even though it be only a "dirty old black amalgam filling," the accomplishment is a greater pleasure than carving cusps in plaster or hammering them from a metal die.

This then is the argument for the extreme case, and we may now look for conditions under which it would not be expedient; also, to what alternative we might then turn.

The difficulty is increased, first, as the gingivo-occlusal length of the tooth increases; second, as the access for manipulation decreases; third, as the difficulty of obtaining a satisfactory matrix increases. There is but one alternative: Put the crown on. Seldom, however, with its margins below the gum, but always where they may be seen to fit, and may be washed clean.

If I am correct in arguing that such extreme cases should be saved by a contour amalgam filling (and I think there are none here who will not grant there is reason in my argument), then all the long line of molars with less destruction, down to the easily filled cavity, stand crying for your saving hand and bathed in moisture from efforts to escape the persecution of the crown-and-bridge specialist. Like the old-time prosthetic dentists who extracted all the teeth, good and bad, "to make a clean job of it," the crown specialist crowns all whether they need it or not.

But it is not my purpose to say that all crowns are an abomination, that we put them on because they are easily made, feel smooth, look well, and add wonderfully to one's income; neither do I wish to be understood to advocate amalgam to the exclusion of contour gold filling or gold or porcelain inlays in molars, but rather do I wish to show how the usefulness of very many teeth may be prolonged by a manly use of good alloy.

For instance, it often occurs that an upper molar will be decayed mesially and distally toward the center until the two cavities unite, forming a groove which leaves the buccal and lingual plates standing. Sometimes these plates are strong, sometimes weak, according to the extent and depth of the decay. In such cases where the pulp has been destroyed and the cavities extend well up under the gingivæ it is always wise to extend well for prevention and to grind off the occlusal third of the standing plates, and so to adjust the matrix that heavy pressure may be exerted on the amalgam in building a complete occlusal surface with cusps.

There seems to be no hard-and-fast rule as to the use of matrices in such cases. Sometimes I use a strip of German silver rolled hard to 32 or 36 gauge. Two pieces are used, one to form distal and one to form mesial walls for the filling; they are trimmed and bent to fit the case and form as much of the contour as possible, the ends being turned mesially in the one case, distally in the other, to aid in building the amalgam over the palatal and buccal margins. These are wedged into place, and if the contact points have not sufficient contours a softer mix of amalgam is rubbed into the filling after their removal.

Sometimes a band of German silver is pinched on to the tooth after the manner of pinching regulating bands, soldered with soft solder, carefully contoured and fitted and wedged into place.

The adjustment of matrices requires the most careful and patient manipulation, and often takes more time than that required to put in the filling. It is, however, essential to this class of work, but, after all, the matrix is a mere aid and considerable trimming and cutting is frequently necessary after its removal. German silver plate of 26 gauge, bent so that it encircles and clamps the tooth tightly, is sometimes found of great service, being stiff and unyielding. In a case where such is applicable and cannot be made to fit the gingival margin closely, a little cement smeared on the matrix from the gingival border toward the contact point will get one out of a difficulty.

Again, where a tooth has the buccal plate split off up to the process, the gum should be forced away with gutta-percha, and with a bur I cut the beveled dentin squarely off, making a seat against which amalgam may be packed, then by using a screw-post or possibly by retaining in the pulp-chamber and with the aid of a matrix, a good filling may be made. As in the former case, the whole occlusal surface should be built on.

It is unnecessary for me to enlarge in detail upon the cases in which amalgam may be used. If a complete crown may be restored by its use, as I have demonstrated, then why on earth do we use a gold shell crown or gold cap, as you may call it? Is it to preserve the roots? The amalgam will do that! Is it to preserve the remainder of the real crown? The amalgam will do that! Is it for mastication purposes? The amalgam will do that, too. And if it be for none of these reasons, then the profession has a "card up its sleeve" and is playing a game with the public.

For it is the general opinion of the public that a gold cap,—five or twenty-five dollars as the reputation of the house demands,—is the acme of perfection, the done-for-all-time. With a "dead nerve" and a gold cap there is nothing left but to wait for the judgment-day. But alas, how often there is a sad awakening! How often the cement dissolves away and decay goes on! How often the gum becomes inflamed or pyorrhea causes the loss of the grinder! And yet further: How often the cusps wear through and the cap must be removed for repairs!

But there is no cement in an amalgam filling. It is smooth at the gum margin. If pyorrhea sets in there is no impediment to treatment, and the cusps won't wear through.

Why, then, are we deluding ourselves and the public? Is it not because of the greater fee obtained for a cap,—because it is easier to have the boy hammer out the gold cusps than to carve them in amalgam? Yet if the latter performs the same service as the former is it not worth as much?

A profession is not supposed to sell wares. We obtain fees for services, and a service which lasts twenty years is worth as much in one material as in another. So that if Dr. Smith preserves a tooth for twenty years with a filling at three dollars which Dr. Jones caps at ten dollars, it is difficult to decide whether Smith is a fool for making so small a fee, or Jones a knave for robbing his patient.

In conclusion I want to say that the use of gold shell crowns on molars is one of the unnecessary practices in the dental profession, and also to repeat the statement that "so long as the roots of a molar are intact and in such a state of health as to warrant the retention of that tooth in the mouth, it may be restored to usefulness by a contour amalgam filling."

---

## TREATMENT OF DEVITALIZED TEETH.

BY J. WRIGHT BEACH, D.D.S., BUFFALO, N. Y.

(Read at the thirty-fourth annual union convention of the Seventh and Eighth District Dental Societies of the State of New York, Buffalo, October 28, 1902.)

**I**N directing your attention to this time-honored subject once again, it is with the full realization of its threadbare condition, and no doubt there appears scarcely a shred of its tatters remaining on which to grasp and weave into the fabric of substantial argument without resorting to wearisome reiteration. This I am constrained to do, but in view of the importance of the subject, I am prepared to brave your just displeasure from this source.

The relation which proper pulp-canal treatment bears to operative dentistry may be compared to the importance of a good foundation for the walls of a building. The superstructure will show a degree of permanence commensurate only with that degree of thoroughness evidenced in the foundation, whether it be a tooth or a sky-scraper.

A clear understanding of the structure and functions of the tissues immediately surrounding the tooth is, of course, paramount in importance, and the susceptibility of the pericemental membrane to irritation and subsequent inflammation should not be lost sight of during the different stages of pulp-canal treatment.

In cases of recent devitalization, irritation frequently results when excessive hemorrhage follows extirpation and is checked too soon. If immediate root-filling is done under these conditions the liability to pericemental inflammation is greatly increased. Powerful styptics should not be used in the pulp-canal, whether the hemorrhage be due to a freshly irritated surface or to a plethoric



condition of fungoid tissue of indefinite duration, for the lymphatic powers of the periapical region are limited, and resorption is slowly accomplished.

Bleeding may be termed "pathological weeping," and when it is over, the irritated tissues feel relieved, just as a woman does after pent-up grief has found a lacrymose termination. When a hemostatic is needed, adrenalin chlorid will be found effectual, acting on the tissue itself and leaving no coagulum to obstruct the foramen, as do the iron preparations. When devitalizing by pressure anesthesia the hemorrhage should not be checked, nor the root filled, until it has naturally ceased, as inflammation of the periapical tissues will surely result.

The importance of direct approach to the pulp-canals may be emphasized, yet this does not call for wanton destruction of good tooth-structure. Through an opening the size of a No. 5 rose bur, the canals of all the molars may be easily reached and treated; however, we are seldom restricted to such limited territory, and whenever possible a full view of the pulp-chamber and the diverging canals should be obtained.

Approach to the canals of the anterior teeth might even be limited to smaller openings were it not necessary to reach the bulbous portion of the pulp resting in the crown toward the incisal edge. Whenever advisable, access should be obtained at the palatal pit, even though approximal cavities may exist, as a more direct line of approach may be secured, which greatly facilitates the treatment. This is especially applicable when retaining or restoring the color of the teeth.

The use of canal reamers should be avoided whenever feasible, and when employed they should not be carried beyond the apical third of the pulp-canal. Reamers are indicated after extirpation only in those cases where the canal is to be enlarged for a crown-post, and then not until the apical foramen has been carefully sealed.

Essential oils should seldom be used as a root-canal dressing in the ten anterior teeth where the crowns are to be preserved. The oils of cassia and cinnamon are particularly prohibited on account of the objectionable shade that results. Hydrogen dioxid will prove sufficient to overcome the large majority of diseased conditions and should be strictly adhered to when extirpation has been done at the proper time. After the hemorrhage has naturally subsided, a few loosely wound fibers of absorbent cotton upon the broach may be loaded with hydrogen dioxid and the canal thoroughly flooded, particular attention being paid to the apical region, that the medicament reaches it well, but is not *forced* through the foramen.

If the instruments have been properly sterilized the liability to infection is slight, and we may feel reasonably sure of asepsis in these cases. Desiccation of the tract is the next step, and must not be overdone. Hot air should be avoided, as warm air will be found efficient. Hot air is an irritant to the sensitive surrounding membrane and removes the natural moisture from the dentinal tubuli,

besides frequently producing pain. That the apical region be thoroughly dry before permanently sealing is not essential, in fact is oftentimes detrimental, provided asepsis has been established. At this stage of the operation, it is well to lightly bathe the canal with the oil of eucalyptus, which facilitates the flowing of the root-filling of chloro-percha.

In filling the roots of the upper teeth the patient is elevated, the chair tilted back, and the chin thrown up so that the angle of the tooth is reversed. A little trough made of sheet steel or copper is then grasped in the pliers, loaded with liquid chloro-percha and carried into the cavity, being held on a line with the canal to be filled and directed into it by a pumping movement with a fine, smooth broach. Gutta-percha cones are then introduced and the operation is complete.

This treatment applies to all the teeth when conditions are similar, except that gravity aids in operating upon the lower ones.

No material is better adapted for root-canal filling than chloro-percha. It may rest against the sensitive pericemental tissue without producing irritation; it will flow into the most minute canals and the air may be removed by the pumping movement of the broach, while it may be made antiseptic by the addition of an agent for that purpose. Eucalypto-percha may be substituted, and is not subject to shrinkage, but does not flow so readily as chloro-percha.

In the treatment of bicuspsids and molars which have harbored putrescent pulps, no procedure gives better results than the use of sulfuric acid (40 to 50 per cent.) directed by a twist broach, which avoids crowding debris into the periapical space, as sometimes occurs from the use of the usual form of barbed instruments. An antacid is then applied in a similar way, and when through, you have accomplished the twofold purpose of opening the constricted canals and rendering them antiseptic also. The twist instruments made from piano wire without removing the temper will be found especially well adapted to pulp-canal work in general. They are made for the right angle as well as for freehand work, and will search out and open up a constricted canal as will no other instrument it has been my privilege to employ.

The initial treatment of this class of cases, as well as those with fistulous openings, should be most thorough in order that complete control may be had from the start. This should be followed by frequent treatments, with a view to retaining and following up the advantage gained at first. Hydrogen dioxid will usually be found efficient under these conditions, thus avoiding the use of powerful antiseptics. Dressings should always be sealed in with temporary stopping instead of cotton alone or saturated with a varnish, provided the formation of gas does not prohibit it.

The use of cotton loaded with an antiseptic as a root-filling is hardly considered good practice at the present time, yet I had occasion recently to remove such a filling from the pulp-canal of an upper canine which was placed twenty-two years ago. It was done by one of our older and most skillful practitioners, and on several previous occasions I have had similar experiences, although

in a small percentage of the cases fistulous abscesses had developed. A recent case demonstrated to me the possibility of a too radical pulp-canal treatment. The upper right first molar was presented having fistulous tracts opposite each of its roots, from which pus exuded upon slight pressure. The history of the case was that of devitalization by the usual method, followed by root-fillings in due time, the work being performed by a skillful and conscientious operator. Upon opening the roots it was discovered that they had been enlarged with a Gates-Glidden drill until the canals of the buccal roots were as large as that of the palatal, and upon tracing out the latter an opening was found into the maxillary sinus which discharged quantities of pus. Gutta-percha was subsequently found in the antrum, which indicated that it had been forced through at the time of filling.

Occasionally we are called upon to treat an aggravating class of cases which result from puncture of the sides of roots or at the bifurcation in the first bicuspid and the molars. Sometimes these cases present conditions that are difficult of correction, and extreme care is demanded in the treatment when the pericemental tissue is involved. Bland applications are called for, to soothe the irritated membrane. Adrenalin chlorid will control the hemorrhage, after which creasote may be applied, followed by drying the parts with warm (not hot) air. A piece of gutta-percha is then warmed and pressed to wafer-like thinness, and made of a size which will cover the opening and rest upon the surrounding surfaces. It is then softened in eucalypto- or chloro-percha, or slightly warmed and gently carried to place without undue pressure. Over this is flowed, not crowded, rather thin cement, which is permitted to set well before the permanent filling is placed.

My treatment of this subject is neither exhaustive nor connected, the object being solely to touch upon a few points in order to provoke a free discussion, which seldom fails to bring out original methods and new ideas.

---

## HYGIENIC FILLINGS.

BY DR. LEVI C. TAYLOR, HARTFORD, CONN.

(Read before the Northeastern Dental Association at its annual meeting, Worcester, Mass., October 16, 1902.)

**H**YGIENE of the mouth has occupied much time and thought among those practitioners who desire to give their patients the best results.

In our efforts to discuss the subject to-day we will try to confine ourselves to fillings and some of the different materials used for the same.

When decay has advanced far enough to cause a breakdown of tooth-structure and eventual loss of tooth-material sufficient to produce a cavity, we are confronted with a problem. We solve this problem by the best method known to us; that is, by filling the cavity. First, we presume to excavate all decay, and, in many



instances, cut away quite a portion of tooth-structure for the purpose of properly shaping the cavity, as we call it. In so doing we have cut over the line of disease into healthy tissue where we find all the little tubuli wide open. The sealing of the tubuli is the one important feature in the preservation of tooth-structure. To attempt this by forcing metal against the walls of the cavity has been the great effort of the dentist for more than half a century. How far has he succeeded? Perhaps a few have attained as high as thirty to fifty per cent. of successes, but it is not probable that the total effort of all practitioners amounts to more than five to seven per cent. Is not this a lamentable showing? Is it not time we look about us and inquire why there are so many failures?

Years ago, almost any ductile material was used in crown cavities where the tooth was of fine texture and needed little protection. The more difficult cavities were allowed to remain until destruction had completed its work or an aching pulp demanded the removal of the offending member. Dentistry, fifty years ago, was so much a mechanical business that pathology and hygiene were rarely thought of. The removal of decay was resorted to as a hygienic measure, but more to hold the filling in position, and incidentally to save teeth. (Has any applicant to practice dentistry ever been required to show how much he or she knew about general hygiene of the mouth other than to show how well he or she can pack gold into a tooth, without even inquiring for what purpose said gold is placed there?)

As time passed, the slang phrase "plug" was adopted by many, and is used to some extent now by a class of men who usually think a gold filling of the greater importance. Few, however, even of those most wedded to the gold theory, stop to take account of their stewardship to the patient. We believe the patient who entrusts his mouth to our care is entitled to better consideration than the simple act of placing a gold, amalgam, or tin filling in the tooth. We owe our patients a higher obligation than the simple fact that we have hustled in so many fillings at ——— each.

A patient remarked to a dentist with whom he had just commenced that he did not wish for another appointment for four weeks, giving no reason for this action. After a time his mouth was in order, but he then waited two months before sending his family. He then gave his reason for the delay, which was that his former dentist had not usually been able to make his gold fillings last that length of time. As this work had all stayed in place, he believed the dentist competent and would entrust his entire family to his care. This reference is made to show the necessity of something being done to cultivate a better practice in the filling of teeth.

There are many good and honest men in our professional ranks, but even among them the saving qualities of their plain metal fillings are very poor, and the number of those that do not leak is astonishingly low, probably not over thirty to fifty per cent. I fully believe that of all metal fillings made to-day, those that do not leak will be far below ten per cent.

Have not our patients a right to expect a better consideration of their interests?

Many honest men have experimented with stoppings. We find they preserve the teeth well when there is no wear, but in no case will they endure much service, and being porous they soon become dirty and unsightly.

Cements have proved to be by far the better preserver of teeth, but they will not endure the exposure to the fluids of the mouth. Dr. C. W. Strang, some years ago, demonstrated the value of combining equal parts of cement and amalgam. As far as the preservation of the tooth was concerned, it was valuable; but, owing to the cement washing out and leaving the little nodules of amalgam standing prominently, the surfaces were badly irregular and unsightly.

A few years ago, at Holyoke, I demonstrated a method of mixing my fillings, by taking one-third of the amalgam, when mixed, and grinding it up with cement in about equal parts. A very sticky substance is produced, partaking more of the nature of cement than of amalgam, but which readily passes to every part of the cavity and adheres when the walls are dry. (The rubber dam must be very generally used if we desire good results.) To press the amalgam into the cavity, use a ball burnisher, which will carry the amalgam to the edges of the cavity. In such a filling we have a value for preservation that it is impossible to obtain with amalgam alone. Many who saw me demonstrate have reported that they have found it the most satisfactory method they have seen.

Owing to expansion and shrinkage of most amalgams, the lining of cavities with cement will not produce so good results as the mixing the cement with the amalgam for quite a considerable portion of the filling. With gold for a main portion of our filling, we find it different, as the lining of cement can be used without the disadvantage of expansion and contraction referred to in the use of amalgams.

Being thus elated at the good results thus obtained and the many gratifying reports received, we felt it time to advance another step. For three years I have been using cement, to a considerable extent, under gold fillings. I have for thirty years used it under gold, allowing it to harden and then facing it over with gold. Yes, before the zinc phosphates were in use, we used the old oxychlorid in that way. When I speak of using cement and gold to my professional brethren, they often remark, "Oh! I have used it that way for many years." Upon further inquiry we find their methods to be those we used many years ago. We have found but two men who, prior to 1898, had adopted, to any considerable extent, the method I am about to describe and hope to demonstrate practically to-morrow.

My present method is to place a small quantity of cement in the cavity. If there is too much, press it to the surface over the edges of the cavity, but be sure and scrape the edges until there is not enough left to show. A slow-setting cement is preferable, as it gives ample time to pack the gold and will be more easily condensed under the mallet when welding up the gold. If the cavity is a large one, it is better to mix cement two or three times. When we be-

gin to pack the gold into the cement, it is necessary to have two pluggers, one in each hand, as a slight rock of the gold will so loosen the cement as to spoil the filling.

Fillings started in this way will fill all undercuts, and we can be sure we have a water-tight filling, which is rarely obtained by gold alone, even by those of us who are desirous of doing our best; this is proved by the fact that so many discolor, sometimes slowly, sometimes by actual decay, at the lingual corner in approximal cavities and frequently on the face of a front tooth when a thin portion of the tooth remains. Many other proofs can be produced to sustain the above assertion.

This method is not adopted simply to stick in the fillings, thus making it the lazy man's filling. It is much too complicated for that; it is designed to enable the honest, faithful practitioner to perform his operations so as to produce better results than he has been able to do in the past.

While all the walls of the cavity are protected by the cement, the major part of the filling is gold. On the surface, it has the appearance of an entire gold filling; but, best of all, we have a perfectly hygienic filling that will not discolor. Decay will not appear in a few months' time,—greatly to the mortification of him who desires to be faithful.

Even allowing that the fillings do not last longer than plain gold, we will find that our tooth is left in a far better state of preservation than is possible to obtain with any metal applied directly in contact with the tooth. This cannot be said of the failures so common, where white decay appears around a gold filling.

There is another feature in this method of filling worthy of mention here. The thermal changes so common when gold is placed in direct contact with the tooth are very largely overcome, which is a source of great satisfaction to both patient and dentist.

From several years' experience in the use of cement and amalgam in proper combination, I am fully persuaded that the day is near when the use of gold, amalgam, or other metals will be to protect our cements, while the cement will be the preserving material in contact with the tooth, wholly or combined with metal as the operator may judge to be advisable from his own demonstration.

---

## ERRORS IN DIAGNOSIS.

BY JAMES E. POWER, D.M.D., PROVIDENCE, R. I.,  
ASSISTANT DENTAL SURGEON, RHODE ISLAND AND ST. JOSEPH'S HOSPITALS.

(Read before the Northeastern Dental Association, at Worcester, Mass., October 16, 1902.)

SCIENCE is classified knowledge; art is the practice of those principles afforded by science. The principles of an art are the general truths which are handed down to us by persons who are competent to advise and instruct. When an art is progressive like dentistry, the principles cannot remain stationary, but must change as the result of scientific investigation.



These changes must take place gradually; gradually, because time must elapse to allow new principles to be proved. In order to determine, therefore, the principles of an art susceptible to constant change and improvement, it is necessary to consult the opinion of others engaged in the same line of practice. An adequate knowledge of the principles of dentistry and oral surgery, as thus established, is part of the civil obligation of the dentist. The standard of the judicial estimation of his responsibility in any and every case is the power to apply those principles intelligently in practice; this same standard is required likewise as a professional obligation. He who undertakes to practice a profession, whether it be medical, dental, or surgical, assumes an obligation, both professional and civil, which has all the validity of a formal contract, as from specialists of medicine and surgery there is required at least that degree of care, skill, and knowledge which is possessed ordinarily by those engaged in the same special work. This is regarded by those competent to judge as sufficient to qualify us to engage in our specialties.

If we possess a knowledge of these principles we should be careful in applying them, since we, as a body, have reciprocal obligations to one another. The whole profession is affected to some extent by the errors of individuals. If we consider this carefully, we will see that the elevation or the descent of this profession is controlled by its individual members.

Having selected as our life-work the alleviation of the suffering of man in any of its various forms, our first obligation is care in diagnosis. Thus we obtain a solid foundation on which to base our treatment, and can thereby apply our knowledge and skill intelligently. If we possess the requisite qualifications, and for any reason fail to apply them, we are guilty of negligence; and negligence where the welfare of our patient is concerned is criminal. Negligence in these cases is criminal from the standpoint of justice, and most blameful from the standpoint of professional pride. It is, moreover, fraud, for it is just as much fraud to possess the skill and not to apply it, as it is to endeavor to treat a case without possessing skill, since the possibilities and dangers to which the patient is subjected are in both cases alike. If the attending practitioner, whether he be physician, surgeon, or dentist, overlooks any important step in the care and welfare of his patient, he is guilty of crime. This should not be overlooked in cases where consultation is for the benefit of our patients.

When a case comes to us requiring dental surgical interference, and after treating for a reasonable length of time the patient does not improve, we are bound in the interest of justice to consult others engaged in the same work, and to give our patient the benefit, not only of our individual knowledge and experience, but of the knowledge and experience of the profession in general. Personally, I consider it unjust to neglect even one step in the progressive treatment of a patient, especially when we have been selected to treat and are implicitly trusted, for then our skill, knowledge, or lack of knowledge, places the patient in a position where he cannot know whether

he is being treated correctly or not, until his case may be beyond the limits of science.

Of course we, even as professionals, have the civil right to refuse to take charge of a case of oral surgery or of any other branch of dental science, as extraction, etc., provided we have entirely excluded this special branch from our practice. If, however, we profess to practice oral surgery in any of its various classifications, our professional pride should compel us to treat all cases in this line. I mean that we should not select our cases,—for instance, if we are reasonably sure that our patient will get well, take charge, but refer the case to somebody else if we think it will be of long treatment and uncertain result. This sort of dealing should not exist; our personal and professional pride should prevent it, and if we are willing to receive all the praise, etc., which sometimes is associated with good results, we also should be willing, as men, to assume the responsibility which is associated with the less fortunate results.

In diagnosis, prognosis, operation, and after-treatment, the dentist alone is responsible. In consideration of these facts, we must follow the line of treatment we think best and not allow ourselves to be unduly influenced by the opinions of others. Every step should be taken only after careful and judicious deliberation; this insures good results and leaves no ground for the charge of ignorance or neglect, both of which bring identically the same result.

The first steps in treatment, especially in cases somewhat obscure, are the history of previous conditions and the nature of the existing conditions. Our course of inquiry should be systematically and carefully made, for on it depends the treatment to be pursued. Our examination should be historical, instrumental, visual, and manual. We should impress upon patients how much rests upon their statements and should not trust to these beyond a reasonable degree, for frequently, for unknown reasons, they try, and sometimes succeed, in deceiving by misstatements, as you will see in case No. I.

If other men have treated any case with poor results (as these cases which I will show you to-night), too much stress should not be laid on their diagnosis, for after we accept the case our responsibility is individual. We should be guided, but not governed, by their diagnosis. The fact of any reputable surgeon previously treating a case requiring dental surgical skill should not prevent us from accepting this same case, for we, as special surgeons, should be expected to better understand a special case than the general surgeon.

Once we accept a case, regardless of the amount of money we may get in return, whether it be hundreds of dollars or one dollar, our obligation to the patient is identically the same. We may, as I stated earlier in my paper, refuse a case, but if we accept it, the contract is formed without words or writing and says, "You shall give to your patient the very best attention possible." When we receive money for our services it is a man-to-man transaction, and in the light of justice we give something for something. The motive that inspires us to do some work for charity, as we call it, is either sentimental sympathy or a recognition of God's goodness to us. As

to such sympathy, you will agree that our feelings soon become dulled in actual practice. On the other hand, it is certainly a most consoling assurance that one can offer some free work to the poor, in recognition of the Divine Providence in conferring upon him whatever talent he may possess.

Although it is generally supposed that errors in diagnosis are due, in a great majority of cases, to carelessness and inattention, we sometimes have cases in which neither of these is the direct cause. In the cases which I will show you to-night, let each man remember that some errors in diagnosis cannot be assigned to any one person or cause.

I will report three cases to-night: I, Mrs. W., age fifty-six, American; II, Edith V., age eleven, Italian; III, Miss A. R., age twenty-six, Irish.

*Case No. I.*—Mrs. W., age fifty-six years; American. The patient had a fistulous opening a little larger in circumference than a large pinhole on the outside of the face, left side, with constant oozing of pus from it. Inside presented an apparently healthy mouth; all the natural teeth extracted and substituted by an upper and lower artificial denture. Absorption had taken place and ridges seemed hard and healthy. Inside the lower jaw, at the side of the fistula, in the region of the third molar, was a hard globular swelling, which patient said was diagnosed by a surgeon as a blood tumor. It was about the size of a pea and highly inflamed.

After thorough visual examination, I proceeded to obtain a history of the case, which is as follows: About eleven years previous to November, 1899, a small swelling appeared on left side of face near the angle of the jaw; the patient did not mind it very much as there was no pain associated with it. Swelling increased during this year, so the patient thought it was caused by a sensitive tooth on the side of her jaw, and visited a dentist for advice. He examined the tooth and advised extraction; the patient consented. The operation was successful; all the tooth was removed. This tooth, patient stated, was perfectly normal and sound.

During the next year the swelling increased, and the patient became alarmed. She visited a physician, who referred her to a dentist; the dentist advised extraction of all the teeth as a probable treatment for a cure. Patient did not wish to lose all her natural teeth, so visited dentist number two; then, still with the same desire, visited dentist number three. Dentists numbers one, two, and three all were of the same opinion, viz, extraction of all the teeth as the proper treatment for the removal of the swelling. Finally, during the next two years the patient had all her natural teeth extracted and substituted by artificial ones. The swelling still remained. During the next five years she visited several physicians and surgeons, who diagnosed her case as a tumor of the bone and advised operation. She would not consent until about three years ago.

At this time she entered the Rhode Island Hospital. Case diagnosed as tumor of bone; operation advised; the patient consented. Operation consisted of making an external incision and scraping off of the bone. The swelling decreased, but pus flowed from a fistulous opening at the end of the incision. Patient remained in hospital about four weeks; left at the end of this time with pus flowing from the outside through the fistula. Patient visited another surgeon, who diagnosed her case as a blood tumor and advised operation; patient refused. The surgeon referred the patient to me in November, 1899, about three months after the first surgical operation was performed, and eleven years after the trouble first started. Visual examination revealed the conditions stated in the beginning of this paper.

I proceeded to examine with a probe, first cutting through the globular swelling on the inside, which had been diagnosed as a blood tumor, and then breaking through the up layer of bone. I began to probe through the



opening I had made, and after directing my probe backward, I felt something smooth. I suggested to patient malposed or maldeveloped third molars. She said she was positive these teeth were extracted, as she remembered distinctly making a special visit to the dentist to have this done. Regardless of her positive or seemingly positive statement, I was quite sure I was right, and having had some experience with patients being mistaken, advised operation. Patient asked me if I was sure I could induce a complete cure. I told her I was not, but was sure beyond a reasonable doubt; otherwise I would not assume the responsibility connected with such cases. She finally consented, and on November 1, 1899, I proceeded to operate under ether. By holding the mouth open with a surgical prop, I began to operate from the inside.

I made a crucial incision on ridge near angle of jaw, dissected back membrane, and exposed bone. I next broke away the bone with chisel and exposed the crown of a tooth imbedded in the bone about one-eighth of an inch from surface. Then with beak forceps I grasped the crown of the tooth, which instantly broke off, as you see by slide A, thereby complicating matters somewhat. I then used the probe to ascertain the direction of the tooth, if possible, and found it lying parallel with the body of the jaw bone, apex forward and crown backward. Knowing the anterior surface of the tooth was now superior and covered by dense bone along its entire length, I proceeded to chisel the bone away: after cutting away about one and one-fourth inches of bone, I, after several attempts, by means of elevator, removed the tooth, which you now see on slide B. I next took a curette and smoothed all the rough edges of the bone; gave a prescription and discharged the patient. Time, forty-five minutes. Saw the patient every day for the next eight or ten days, and every other day the remainder of the time.

Discharged patient cured, fistula entirely healed, in four weeks. Pus had stopped the day after operation.

The large tooth on slide B is taken from same patient on the day of operation.

I thought it wise to examine the other side of the patient's jaw, as there was a possibility of another malposed tooth being present that would cause trouble later. I cut through tissues, etc., as on the opposite side, and finally exposed the crown of a tooth which seemed to have a vertical position. Then by means of forceps, I gradually, by side to side motion, succeeded in removing the tooth you see on slide C. Necrosis appeared in the bottom of the socket, which was very deep. I treated with aromatic sulfuric acid, removed small particles of bone, and in about eight days the socket was entirely well.

Necrosis appearing at the bottom of the socket leads me to believe that it was only a question of time when the same trouble would have existed as on the opposite side.

Two years have now elapsed since operation, and examination last week showed everything in normal condition, thereby assuring me that a permanent cure has been effected.

*Case No. II.*—An Italian female child, eleven years old, was among the patients at my clinic at the Rhode Island Hospital on November 4, 1899.

Examination presented a swollen face on left side with fistulous opening at the angle of the jaw, with constant flowing of pus from it. I passed a probe into the sinus, and directed it inward about one inch and a half; the probe did not enter the oral cavity but stopped on coming in contact with something, presumably the jaw bone. Inside the mouth everything seemed normal.—no inflammation, no decayed teeth, and entire absence of pain on tapping the teeth on this side of the jaw. All the teeth were present, the second molar just erupting, the first being in position.

After completing the examination, I proceeded to obtain the history of the case, first sending for the child's parents, that no mistake might be made. The history that I obtained was as follows: About two years

previous to this time, the patient living in Italy, she was taken ill with some fever, and while in this condition was troubled with severe toothache, followed by swelling, etc. A dentist was called, who extracted the temporary molar; the pain increased and he was sent for again. Swelling and pain were still present. Patient then sent for a physician, whom the patient said was a good one because he wore a medal. This physician lanced the face on the outside; pain relieved. After being treated for a few days, the patient left Italy for this country; had some pain coming across, and the steamer's surgeon took charge of the case during the remainder of the voyage. On arriving at New York, the surgeon advised immediate operation, and also told the child's parents it must be done in New York. Accordingly she was sent to a hospital on Long Island. This was on January 27, 1898, and she was operated upon twice for necrosis between that time and May, 1898, remaining in hospital five months. At the end of May she was not improved, so her father went to New York and brought the child home. She remained at home one month; at the end of that time entered Rhode Island Hospital and remained there until the latter part of August. Two operations were performed from outside of the face during this time, a total of four operations in eight months, seven months of hospital life with no cure, but pus still running from the sinus as in the first stages in Italy.

After this patient left the hospital and was treated at out-patient department by different surgeons until November 4, 1899, making fourteen months. On November 4, 1899, the surgeon referred her to my clinic at the Rhode Island Hospital, and examination presented the condition stated earlier in this paper.

The history of this case is alone responsible for the cure, as by it I formed my diagnosis, likewise my method of procedure. First, I knew from the age of the child that it must have been the temporary molar that the dentist extracted, and the girl's statement that the dentist tried but could not extract the roots of this tooth led me to believe that he did not know it was a temporary tooth with probably absorbed roots, and thinking it was permanent, in trying to extract the roots he reached low and fractured a small portion of the jaw bone. This portion, after being splintered, of course became foreign to the system, and the system in the regular order of things tried to expel it; it being caught in the roots of the first molar, of course it could not move, the resistant capacity of the tooth being greater than that of the expelling force of the system. The two forces continued to oppose each other; the system trying to expel it, the tooth refusing to allow it to pass. The system being the weaker of the two forces, was being defeated, so its next object was to let the world know it was struggling; hence we get all the progressive steps from hyperemia to suppuration. Suppuration continued all this time, and the system never did, or never would, consent to rest until that foreign body was removed.

Basing my diagnosis on this theory, I extracted the first molar, which you see in the slide with small spiculæ of bone caught in the bifurcation of the roots. I then scraped and washed the bone thoroughly and discharged the patient, feeling quite sure I had treated the seat of the trouble and that she would get well. At the end of four days I was rewarded, for the pus stopped running and the patient began to get well. The sinus, which had been open for about three years, was almost permanent and did not seem to heal, so by means of a small, sharp, spoon-shaped curette, I pared the inner wall of the sinus, producing a fresh surface, applied silver nitrate to promote granulations, and at the end of three weeks the sinus was entirely healed and the patient was discharged, cured. I used iodoformol sprinkled on plain sterilized gauze as a dressing for the sinus, before trying to close it. It seemed to possess the same properties as iodoform, minus the disagreeable odor.

I examined this patient last week and everything seemed normal, sinus entirely closed, patient well and healthy. Thirty-six months have elapsed since operation.

One strange thing connected with this case was the presence of the abscess in the bifurcation of the roots without affecting the vitality of the tooth or surrounding tissues, as there was no periodontitis present.

*Case No. III.*—Miss A. R., age twenty-six. Occupation, domestic. Family history good. The patient was in poor physical condition; was referred to me for advice last August. Examination presented an apparently healthy mouth, with some of the back teeth extracted; also the upper left canine. Eye inflamed and sore, soreness extended over orbit and forehead; in center of forehead was a large sinus with constant oozing of pus.

The history of the case is as follows: About four years previous to August, 1900, patient was troubled by severe headaches which were almost constant. Anything white would cause severe pain to the eyes, stopping would cause sudden dizziness, head seldom clear, had some difficulty in breathing, the left canine ached occasionally, and the left eye ached constantly. Patient visited a physician, who diagnosed her case as malaria and treated her with quinin; this seemed to increase the headache, so the patient stopped this treatment after a very short period. The patient first started treatment about three months after headache first began; after being treated for malaria she stopped treatment for two years. At the end of this time she visited a physician, who referred her to a dentist, who extracted the bicuspid and molar teeth on both sides, leaving a decayed canine.

Patient while at some summer resort with a family visited a dentist to have the canine tooth extracted. The dentist, patient says, broke it three times in trying to extract it and finally discharged her with small portion of the root, which he said would work down. Toothache now subsided and about a month later she returned to the city.

After being home a short while, her eye became highly inflamed, the tissue underneath became swollen, and the whole face ached. She now visited a physician who diagnosed her case as ivy poison and treated her accordingly. After three days he changed his diagnosis to erysipelas and treated her for this for fifteen days; patient improved. The trouble came on again and she visited the hospital for advice. Diagnosis: Trouble in frontal sinus; operation advised. The patient refused. The surgeon gave a prescription for a wash, which seemed to give relief for about one month. At the end of this time she visited a physician who diagnosed erysipelas again, and treated her for fifteen days with washes. On December 14, 1899, the forehead became swollen and a physician made incision. On January 2, 1900, he incised it again; he treated her until February 7, 1900; pus running since first incision. On February 7, 1900, he referred her to St. Joseph's Hospital. Diagnosis: Trouble in frontal sinus; operation advised. Patient consented, and two days later operation was performed. Ten days after operation she was again treated for erysipelas. Patient remained in hospital six weeks; at the end of this time was discharged improved and referred to out-patient department; pus still running. Visited out-patient department till about June 1, 1900; pus still running. Patient now became discouraged and stopped treating, thinking the trouble was incurable. Finally, about the latter part of August, she was referred to me.

Examination presented the conditions stated earlier in my paper. I proceeded to examine with a probe and after a few minutes discovered the root of a canine tooth. I then cut the gum away, and by means of bayonet-shaped root forceps removed broken root; pus flowed from the socket. After a short while discharged the patient until next day. On seeing the patient the next time, I was quite surprised to learn that the headache had disappeared entirely for the first time in four years, and the pus from the sinus stopped running about six hours after the extraction of the canine root. I examined the patient at the same time I examined others: found sinus entirely healed, everything normal, no headaches since extraction.



I wish to say, gentlemen, that I mention this case to show the relation of the teeth to parts not directly connected with them as well as to the parts directly connected. This is my sole object in stating this case, and although I have caused a complete cure, I feel that I must admit that the result surprised me as much as any person could be surprised, for when I operated I did so with the intention of relieving the pain in the face and eye, never thinking there could be any connection between the sinus in the center of the forehead and the canine root.

---

## PROCEEDINGS OF SOCIETIES.

---

### INTERNATIONAL DENTAL FEDERATION AND INTERNATIONAL COMMISSION OF EDUCATION. SECOND GENERAL MEETING, HELD IN STOCKHOLM, SWEDEN, AUGUST, 1902.

(Continued from page 1143.)

#### INTERNATIONAL DENTAL FEDERATION.

WEDNESDAY, AUGUST 20, 1902—*Continued.*

DR. E. SAUVEZ, the secretary-general, then read the report which here follows:

*Gentlemen and Honored Confrères*,—I consider that my first duty before presenting this report is to express my deep gratitude to my colleagues of the Executive Council for the honor conferred upon me last year at the London and Cambridge meetings by appointing me secretary-general of the International Dental Federation for the year 1901-2. I fully appreciate the importance of the position, and if during the course of the past year I have given evidence of even slight negligence I now ask you to excuse anything that I may have done that could deserve such a criticism. Several members of the Commission of Education because of insurmountable circumstances are not able to be present at these meetings, and I have been requested to present the regrets of Drs. Kirk, Roy, Pearson, Rosenthal, and Burne.

I will now give you a *résumé* of the most important events that brought about the organization of this body, and also the steps taken by the Federation since its last year's meeting. It is exactly two years since the Federation was organized, it being created by a resolution of the general assembly of the Third International Dental Congress, held in Paris in 1900. Its first meeting took place last year in Cambridge, and in looking at the present audience I cannot help seeing that the importance of this body has been largely increased since our last meeting. The great assembly of which the Federation is the outgrowth thought that the work of preparing congresses by the constitution of international committees should survive for a future work similar in nature to that for which they were originally created. That assembly appreciated the advantages to be derived from bringing together the profes-

sional forces scattered in the different countries and forming in this way a permanent international body. This is a very solid and compact group because of the status of the members that compose it, inasmuch as the members of the national committees have been elected by their *confrères* after due selection, the only way of satisfying minds imbued with modern liberal ideas. For this reason the Federation met with warm approval beyond the Atlantic, as it is an organization fully in harmony with the ideas of the sons of free America.

The Federation, then, and its Executive Council are the direct outgrowth of the Congress of 1900. At the memorable meeting to which we have already referred, the *Fédération Dentaire Internationale* was created, and it was decided that a permanent committee of nine members should direct the work of the Federation until the holding of the next congress. The Executive Council decided to create international commissions to study the most important questions of our profession, viz, dental education and public dental hygiene. The first session was held last year, partly in London and partly in Cambridge. That session was devoted especially to the organization of the work and to the consideration of all the questions that were to be submitted for your study and consideration, and to the appointment of essayists to discuss these questions.

The foregoing is a *résumé* of the events that took place up to the adjournment of the Cambridge meeting. Let us examine now what has occurred since that time. The secretary has published the proceedings of the London-Cambridge meeting, viz, a *résumé* of the meetings of the Executive Council and of the International Commission of Education. This report has been published in French, and, thanks to the kind interest which Dr. Kirk had in this matter, the report has also been published in English, and each of you have received a copy. We were also able to publish the report in German, and our colleague, Dr. Aguilar, has taken charge of the publication of the report in Spanish. During the course of the last year we have at intervals published bulletins in four different languages so that the dental profession might be made acquainted with the most important features of our work. Lastly, we have carried out several decisions of the Executive Council, and we have had the satisfaction of receiving a considerable number of replies. Dr. Roy, secretary of the Commission of Education, in conjunction with the secretary-general, has taken steps to obtain the reports the collection of which was decided upon at the last meeting. The Executive Council had asked that a report of the professional status of each country with special reference to schools, societies, and journals be forwarded to the secretary-general. The Commission of Education asked that the members appointed for this purpose should answer the three questions that had been submitted with reference to the best methods of education. This Commission also requested that reports be prepared on the subject of dental legislation and education, and to state the conditions under which the affiliation of all the schools to the

Commission of Education of the F. D. I. might be brought about. The members of the Commission on Public Dental Hygiene were also requested to present a report upon dental hygiene with reference to public health. We have received, translated, and published in three fasciculi which have been sent to you the communications which were forwarded to us, and we now take the opportunity to thank the essayists for their careful work.

We are in receipt of a communication in which we are informed that Dr. Franck had been regularly appointed by the general assembly comprising the delegates of several dental societies of Austria and Hungary in place of Dr. Pichler, consequently Dr. Franck is now a member of the Executive Council, and his collaboration is of great importance to the work of the Federation.

The officers of the Executive Council have held several meetings at frequent intervals and numerous decisions have been rendered. The question of deciding upon the date of this meeting was the cause of numerous discussions and of a voluminous correspondence. The officers of the Federation and of the American Dental Society of Europe, wishing to hold a joint meeting, met with considerable difficulty in fixing the date because of the meetings of the French Congress at Montauban and the German Congress in Munich. Finally, through the efforts of several officers of both societies and the personal efforts of Messrs. Royce, Mitchell, Cunningham, and Davenport, we were able to agree, as the only purpose in view was to assure the success of the Stockholm meeting and a perfect understanding between the members who have come from such distant countries. Because of these circumstances we were obliged to decline an invitation which had been addressed to the members of the Federation by Dr. Haderup, of Copenhagen, on behalf of the Danish Dental Society.

The Executive Council has done everything within its power to increase the attendance at the Stockholm meeting. Communications were addressed to Dr. Limberg, president of the Russian national committee, requesting that the Russian societies should send delegates to the Commission of Education. This question was discussed at the Congress of Odessa, and we have been informed that Dr. Klingelhoef, of St. Petersburg, has been appointed delegate. Professor Limberg, because of ill health, will not be able to be with us on this occasion. We are glad to say that we have been informed that from fifty to sixty delegates have arrived, a number considerably larger than that of last year.

This completes the description of the most important features of our work during 1901-2.

Enough has been said with reference to the past, therefore we will now survey the present. The International Dental Federation begins to-day its second meeting in this beautiful city of Stockholm, in accordance with the decision passed last year at Cambridge and accepted unanimously by the members of the Executive Council, following the invitation regularly transmitted to us by Messrs. Förberg, Christensen, Sandstedt, and Forssman.



The Executive Council will consider whether there is any necessity for amending the by-laws, inasmuch as it is only one year since they were adopted. It will look into the question of the proportional division of the expense incurred by the Federation. It will have to appoint officers for the coming year, and it will have to carefully examine the question of the part which the Federation should take in the next International Congress of Medicine, to be held in Madrid in April, 1903. The Federation will have to designate the city in which the next meeting of our association should be held, and as the period for the holding of the next International Congress is very near, it will have to select the city in which this international gathering shall take place. It will have to appoint to the existing committees the delegates to the Federation. The Executive Council cannot make this distribution of members, which by the way is the basis of the work of this association, unless the Executive Council knows definitely the names of the delegates, of the societies they represent, as well as the character of the mission they have been entrusted to carry out in Stockholm. In one word, the Executive Council should know the special line of work the delegates would wish to take up in connection with the Federation work.

We have two official delegates from foreign governments. Dr. Florestan Aguilar is the representative of Spain, and Dr. Vincenzo Guerini represents the government of Italy. We have received official communications from several societies with reference to the appointment of delegates, but some of the delegates that are in Stockholm at present have not registered as yet, and it is necessary that the Executive Council should certify their credentials. I will therefore ask the delegates to turn over to the secretary-general their credentials immediately after the adjournment of this meeting; also the papers, addresses, etc., with which they have been entrusted by their governments, federations, or societies. They will be asked to indicate in what committee they would like to take part. All of you, I presume, understand the importance of this recommendation.

It will also be the duty of the Executive Council to discuss whether it would be useful to appoint new committees in order to widen the field of activity of the Federation. We believe that it would be a useful measure to create a committee on Schools that would regulate all the questions regarding scholarship, matriculation, requirements of admission, and examination of students. Such a committee would be in position to give correct information regarding all topics connected with school organization. It would also be advisable to organize a committee on Jurisprudence and Deontology, in order to centralize in this way all the information regarding the practice of dentistry in the different countries, as well as all the laws and regulations that affect our profession. A committee on Statistics would also be an advisable addition to the committees already appointed by the Federation.

These are, gentlemen and *confrères*, only very superficial indica-

tions, and it remains with the Executive Council to decide whether such committees should be appointed.

The work of the International Commission on Education will be carefully discussed in a very complete report which will be presented by M. Martinier, who was appointed on this Commission at the meeting held in August, 1900, and who had been substituted last year by Dr. Roy. In this report the essayist will examine the documents that are printed in the three fasciculi.

Twelve reports were received in time for publication in these bulletins; others arrived too late to be inserted therein. You will find in these reports profitable topics for discussion, and you will be able to reach definite conclusions with reference to the best methods of dental education. This Commission, before proceeding with its work, will have to appoint officers for the coming session.

The Commission on Public Dental Hygiene submitted a series of questions to representative members of the dental profession the world over, as appears in the report which has been translated and published in French. Unfortunately we have not had time to translate and publish all the papers and documents connected with this report. The commission will increase its membership by the addition of new delegates, will appoint officers, and will organize its general plan of work. We are convinced that the discussions of these two commissions will bring about fruitful results, and that the 1902 session of the Federation will do a great deal toward the solution of the multiple questions which will be brought up for discussion.

This, gentlemen, is the work that we shall have to undertake in Stockholm. Besides that we shall have to prepare the work for the next session, submit new topics for discussion, appoint essayists, and divide the work according to personal abilities and inclinations. It is in this way only that we shall be able to organize a Federation which will grow daily in importance and usefulness.

I have attempted to bring before you in this report in as clear a manner as possible the work that is awaiting our consideration. I am sure that you all will agree with me when I say that the very few days that we have for the study of these important points constitute very limited time if we consider the magnitude of the work.

In ending this report, I regret that it has been of such slight interest, that it is only a business report. Before concluding, however, I want to call your attention to another very important point in connection with our work, viz, that nationalities and personalities do not exist here. As I stated last year, we are only the cells of an organ; the cells change, but the organ remains the same. The great army which is formed by all the dentists the world over has appointed us to represent it and to take care of their interests until the next meeting, that is, until the next congress. The members that are here present constitute the officers of this army, and we must show the next congress that we have endeavored to carry out our mission.

## NEW YORK ODONTOLOGICAL SOCIETY.

A REGULAR meeting of the New York Odontological Society was held on Tuesday evening, March 18, 1902, at the Academy of Medicine, No. 17 West Forty-third street, New York city; the president, Dr. Hodson, in the chair.

The secretary read the minutes of the last meeting, which were approved. After the consideration of various proposed amendments of the constitution and by-laws, several of which were adopted,

Dr. F. T. VAN WOERT, the essayist of the evening, made the following address:

## X RAYS IN DENTISTRY.

I appear before you rather misrepresented by your committee. In the first place, I am advertised to talk to you upon X rays in dentistry and give a stereopticon illustration of what has been done. This I distinctly told one member of your committee I did not intend to do. My object in coming here this evening is to show you what can be done, not what has been done. I have not written a paper, as the subject hardly warrants it. The purpose of my appearance before you is simply to demonstrate in a practical way the making of X-ray pictures as we do it in our office.

I am not going into details in regard to the scientific theory as to what X rays are. I am simply going to give you the practical work in what I consider one of the most advantageous applications of the X rays that is known. In the first place, many members of the profession who have seen illustrations or shadows of the bones of their hands in the fluoroscope think there is something back of all this which makes it necessary to have a very great knowledge of the X rays to make it practical in dental work. This is not so. The preparation for making radiographs in dentistry is a very simple one, and one that I might say almost any schoolboy could follow with success. I propose to show you how we prepare the films, the mode of application, etc. We have many people come who require pictures made of obscure conditions, such as the supposed non-eruption of teeth, malposed teeth, abscesses, etc. I think there are very few conditions presented to us which are more important than that of the correction of irregularities and the application of the X rays in that direction. In fact, ninety per cent. of the cases that have been presented are for that purpose.

In the time during which I have been working in this direction, there are few in the dental profession, I presume, who have had more opportunity of observing difficult cases than I have. And of all the cases presented I have yet to find a half-dozen in which success has not been attained.

We use an ordinary kodak film, a paper envelope, and pellet of velum rubber. The preparation takes a few minutes in a dark room and the result is a film which can be placed in the mouth. Place the patient before the tube and expose to rays from half a minute to two minutes.

Had I brought with me lantern slides of what has been done in



the past, I could have shown you something very nice, because I should have sent them to someone who was expert in the work, and had them doctored; but that is not representative of what we are turning out at our office. I want to show you just what we do, leaving it to you to judge as to its practicability. I have here a few prints which I will pass around.

I buy the ordinary No. 1 pocket kodak film. Taking it into the dark room, it is folded double, as I show you now. Here is a little pattern of aluminum; we have different shapes, and select one which is applicable to the case. That is placed on the outside of the film, and the film cut to the proper shape. This same model is placed on an ordinary piece of black paper, and the finger is run around the edge to get the exact shape. That shape is then cut out of the black paper, the film is placed in it, and the edges are turned over and pasted. Then the whole thing is covered with rubber. The result is a light and water-proof envelope which can be placed in any part of the mouth without injury.

Opinions have differed as to the position of the platinum plate, as to its being in line with the face of the patient, but I think it makes very little difference. If the patient is placed directly in front of the tube, twelve to fifteen inches from it, an exposure of one minute will give you a result as depicted on the pictures I have here.

On the upper jaw the amount of matter intervening between the upper portion of the root and the film is about three to five, or sometimes ten, times that of the lower. In other words, there is so much opaque matter there that it is very difficult to get that, and, if it be secured, almost invariably that root is distorted; it is enlarged and made to represent a different condition from that which exists. That is one thing that is very disappointing to many who have not had experience in this line.

The making of a radiograph of the hand or the arm, or the leg, is a different matter, because it can be gauged as to the distance between the osseous tissue and the sensitive film; but with the teeth that is utterly impossible, because you cannot tell until after the first exposure, and many times not even then, just in what direction the tooth lies, and not knowing that, you must take your chances in depicting any one portion of the root over the other.

The notice calls for the introduction of patients for the making of pictures. If any of the members present have come prepared for that, I wish they would let me know, so we can begin that work, because it takes a little time, and I want to show you the whole thing. If you have a patient, I will show you what can be done, and explain it as best I can as we go along.

Dr. TRACY. I have asked several members if they had any material, but no one has come forward with any patient.

Dr. VAN WOERT. That being the case, what objection is there to some of the members coming forward and trying it?

Dr. OTTOLENGUI. I have a tooth in my head that Dr. Van Woert was unable to cure some time ago. After he had treated it for some time, I had Dr. Rhein treat it, and after he cured it it broke out again.

From jest to earnest: I want to remind those who have seen the pictures, of some beautiful pictures we published from Dr. Price,—a long series,—showing abscessed conditions. I would like very much to have Dr. Van Woert make a picture of this tooth, in order if possible to discover what area of absorption is going on at the end of that root. It is a central incisor. The root and the tooth are filled,—all done very aseptically and all that,—but we have had an eruption after the volcano dried up. If we had an X-ray picture, perhaps it might assist us to clear up the matter.

Dr. VAN WOERT. A divine of the city of New York presented himself with a tooth like Dr. Ottolengui's, and with it I was just as unsuccessful as with Dr. Ottolengui's. He came into the office some time later to see the X rays, and I made a picture of the abscessed tooth for him. He went away, and claims he has not had any trouble with the tooth since, laughingly attributing it to the X ray.

Dr. OTTOLENGUI. Before I allow myself to become a martyr to science, I want to say that Dr. Van Woert invited me to his office one night, and took a picture of my hand; he developed it, and proved to me that there was a beautiful growth of ferns in my hand. I doubted it, and we took a second picture. There were more ferns in that, but of a different kind. If there are to be any growths, I want him to tell me what they are going to be.

Dr. VAN WOERT. The negatives we turned over to Professor Morton at the White Mountains some years ago, and he never classified these forms of ferns; I hope we will hear from him to-night.

(Dr. Van Woert then made two exposures of Dr. Ottolengui's tooth.)

Dr. VAN WOERT. The first exposure is according to the way we make it; the second is according to Dr. Ottolengui's idea. The pictures will be developed right here, and you can see the result. The tube I have here is one I have been using for four years. I have a new one that came from Philadelphia not more than two weeks ago, that is not worth one-quarter what this is.

The question is asked, What prevents a picture of the finger being taken, as it holds the plate in the mouth? I would say that the film is in front of the finger.

(Dr. Keppy then came forward and had a picture taken of his mouth, as he suspected that there was an upper third molar which had never erupted.)

Dr. VAN WOERT. Professor Starr presented a case to me some three years ago at the New York College of Dentistry, with a non-erupted first molar, I believe, well up in the arch. It was impossible to locate it with the X ray at that time. Later, he sent the patient to me at the office and I tried again and failed. I tried three times and failed each time to get any impression. Notwithstanding, Dr. Starr found a tooth with instruments, as he says, so it must have been a failure on the part of the instrument.

Patients as a rule are anxious to know whether there is any possibility of a burn. I can say I never yet have seen a case of burning

from taking pictures of the teeth, because the exposure is so short that I do not think it is possible to burn the face,—if it is a burn. One of New York's physicians defines it as a septic sore rather than a burn.

The PRESIDENT. How do you gauge the amount of time you want?

Dr. VAN WOERT. That is only experience. We take them right along.

Dr. EVANS. What is the cause of the burns? Too long exposure?

Dr. VAN WOERT. A physician of this city, not very well known in dental circles, claims that it is due to the forcing of septic matter into the tissues. I once gave two exposures of forty minutes each in an abdominal case, but the patient was prepared as for a surgical operation, and no bad results followed,—whether from that fact, I do not know; I am not giving it as my theory, or even accepting it, but it seems possible. We have Professor Morton with us to-night, and perhaps he will tell us more about it.

Dr. EVANS. I have a second molar in my mouth, in which the dentists operating on it have never been able to find the root-canal of the third root. Would that show in a picture? I am having considerable trouble with it, and it is a tooth I would not lose for a small fortune.

Dr. VAN WOERT. I have seen cases where it was claimed you could define distinctly a case of exostosis, where an abscess such as Dr. Ottolengui spoke of could be clearly defined. Some of those cases show very plainly, and others do not. Whether it is due to defective manipulation in taking or in making the radiographs, or the opacity of the parts surrounding, is a matter to be decided later. I do not think it can be stated distinctly as to whether or not that is the case.

The rubber covering I speak of is not rubber dam nor ordinary vulcanite rubber. It is palate or velum rubber. It is very thin and transparent and sticky. If you do not believe it, take a sheet and try to pull it from the covering that comes about it. We ruined about half of it before we learned how to manage it.

(Dr. Meeker had a picture taken of a lower third molar.)

Dr. VAN WOERT. A question has been asked whether a tooth would show anything in the radiograph if it had an old abscess that had healed up. I have never seen anything of the kind, so I cannot answer.

I want to explain one thing in the use of the apparatus. It is very difficult to always get a current with the static machine. If the machine were not thoroughly dry on the inside it would be hard to get a charge on it (if it had become discharged). The apparatus you see here seems to be running very quietly, but it is making about 900 revolutions a minute with glass plates, and that machine has not had a particle of calcium chlorid to dry it since it was put in the office after the renovation it got about two months ago, notwithstanding that some wet days it has had the doors off. I was going to say it will take a charge with water in the machine. I have not



failed to get a charge at any time with a very few revolutions of the disk.

(Dr. Hart had a picture taken of his ramus.)

The PRESIDENT. We have with us Professor Morton, and would like to have him open the discussion on this exceedingly interesting subject.

*Discussion.*

Prof. W. J. MORTON. Mr. President and gentlemen: I can assure you it is with great pleasure I take part again in a discussion before the New York Odontological Society. My mind runs back six years ago, I think, when I had the pleasure of standing pretty much in Dr. Van Woert's shoes, as he stands here to-night, only with the disadvantage of the subject being very much more novel at that time. The news of the Roentgen ray came to this country some time in January, 1896, and in April, 1896, about four months later, the Odontological Society was engaged in a study similar to that of to-night, and I am happy to say that, so far as the record goes, this society was the first to have made any public demonstration (for there were demonstrations that night) or any publication of the utility or advantages of the X ray in dentistry. I have seen it stated that others on the other side of the water had made earlier publications; but such is not the fact. It is a pleasure to consider that we ourselves, in these same walls and these same halls, took the initiative in the X rays for the dental world.

While I am on the historical part, I would like to call your attention to a publication in the DENTAL COSMOS of June, 1896, at page 486, of an address which I made here in April, 1896, and I want to ask you to see how our early prophecies and works have been substantiated by the present work, as you see it to-night. At that time I stated as follows:

"The radiographs presented to you here to-night are but a first step toward taking pictures of the living teeth. They open out to your view a wondrous field for investigation and study and diagnosis. Each errant fang is distinctly placed, however deeply imbedded within its alveolar socket; teeth before their eruption stand forth in plain view; an unsuspected exostosis is revealed; a pocket of necrosis, of suppuration, or of tuberculosis is revealed in its exact outlines; the extent and area and location of metallic fillings are sharply delineated, whether above or below the alveolar line. Most interesting is the fact that the pulp-chamber is beautifully outlined, and that erosions and enlargements may be readily detected. A new method of studying pathology in the living subject is laid before you."

These things were pressed upon your attention then, and I think you will agree with me that they have been fully realized; no better corroboration could be made than by listening to this practical elucidation of the subject made by the essayist.

There were so many interesting points that I myself hardly know where to bring them up in discussion. As I listened, in some cases I felt like giving assent and in others I felt like disagreeing; but I do not think Dr. Van Woert could say anything to which I could

take great exception; and he said many things that gave me considerable thought. He spoke of the fern picture on the negative. I never have given that very much consideration. At that time, I talked with some expert photographers about it. So far as my recollection goes, we all recognized the fact that such fern pictures may occur to anyone in the development of a negative, whether an amateur or a more practiced hand, and are only due to some aberration of the development. Just as an ice crystal will spring across the pavement almost while you are looking at it, throwing out its prongs, so this process is shot forward, in some places more than others, and in a pattern. That I think is the true explanation of the ferns that Dr. Ottolengui found in the picture of his hand.

Dr. Van Woert spoke of the difficulty of getting a sharp outline, and he made a comparison to the process of photographic printing, where if he laid the negative with the glazed side down on the film, which would be the wrong side, you would get an indistinct picture. So far as that goes, I would take most decided exception to that statement. The light which prints the picture on the negative is refrangible, and is diffused by the glass; but the X ray is not diffusible,—it is in a way diffusible, but not refractible or refrangible; therefore the X ray makes a sharper picture than artificial light can make. The X ray going in a straight line to the film and being obstructed by the tooth, and not being deflected, could not do anything like what is done on the photographic plate, and the shadow must be absolutely distinct,—far more so than light could make any picture.

It occurred to me that if the doctor wanted a very sharp definition, it would be easy to get it by increasing the distance from the tube, of the object to be radiographed. If you take a candle and put your hand four inches from the wall, you get a good picture; but if you take it four feet away, you get a more distinct picture. The quality of the definition you want is obtained by carrying the Crookes tube farther and farther away; two or three feet make handsomer pictures than one foot away.

Dr. Van Woert alluded to the fact that when the film was doubled, active side to active, shiny side outside, that the pictures were better. Probably that is so. The explanation is not difficult. It is well known that the X ray is deflected in an irregular manner against whatever it strikes, and when it strikes one film and then the next film, it strikes back. In a little book I published, I showed what difference it made if you put a zinc plate underneath the hand. The X ray strikes downward, as a jet of water would strike the zinc, through the film, and is then shot backward and perhaps outward. I should think that would be a natural explanation of that phenomenon.

Speaking of the septic sore: That seems to me from the present point of view one of the most untenable hypotheses that could possibly be advanced, and if I could make that statement more positive, I would like to do so. The X ray is known to-day from positive experimentation to be microbicidal: it kills almost all the microbes you can enumerate. Those experiments are beyond ques-

tion. It kills them when they are superficial and upon the surface of the body. Whether it will kill the microbe when it is deeply seated in the tissue, as in tuberculosis, or pneumonia, or cases of that kind, is another question; but that it will kill superficially situated microbes there is no doubt whatever. The experiments of Bieder show that beyond question, where he studied the movements of the colonies of microbes. In every case the most virulent were killed; so there is, I think, no discussion about that point. There may be a great many varieties on the skin, but I think they would be killed rather than driven in. The burn, so called, has no relation whatever to a septic sore. It is merely a dermatitis. It may pass on to suppuration and later you may get necrosis of the true skin. Kaposi says that the inflammation from the X ray burn differs from no other except that the walls of the arteries are attacked and that is why the X ray gangrene takes so long to recover, because the blood-vessels themselves are broken down.

Now I come to a line of thought suggested by Dr. Van Woert which makes me feel that I should tread a little cautiously. He spoke of an abscess at the root of a tooth which failed to give further trouble after a picture was taken.

Dr. VAN WOERT. I recited that merely in connection with the taking of the X-ray pictures. I did not think the X rays had anything to do with it. I cited it as being a little strange that he should never have had any trouble since; but probably the case would have healed anyhow.

Dr. MORTON. That is exactly what I thought the doctor believed, and what I think nearly everyone believes. I think to the contrary; I think it is an absolute fact that there was a therapeutic effect on the abscessed cavity, which had gone so far as suppuration, breaking down, and I think the abscess was cured by the X ray passing through it in order to take the picture.

We are standing to-day on the threshold of an X-ray therapy that is opening out as marvelously to our gaze as the taking of the X-ray pictures opened out some five or six years ago. The whole scientific world, including a great deal of the medical world, is giving attention to the possibilities of the X ray, and what it will do is extremely remarkable. It always takes some extraordinary incident, or cure, or some special feature of the discovery to bring it before the mass of physicians and dentists. Lately the cancer question came out, and having gotten into the press, it brought the therapeutics of the question somewhat to a head. There is an enormous field for you as stomatologists for the treatment of diseases with the X ray as well as taking pictures. Perhaps in three months, or two months, you will find Dr. Van Woert as enthusiastic in applying himself to the therapeutics of the X ray as he is to-night in showing this film for taking pictures. He shakes his head. I know there is a considerable degree of obstinacy in his nature, but the most obstinate man can be converted by facts.

The other night I had the pleasure of opening the discussion in the surgical section in this Academy on the subject of cancer. By my side sat one of the most skeptical German physicians I ever met.



I was listening to the paper and the reader was making some remarks, and I had some cases to present which were remarkable, of absolute cure of cancer. I did not go to an Academy meeting without absolute cases to show, and these were absolute cases of cancer which were corroborated by a number of physicians. The reader of the paper, Dr. Williams, of Boston, detailed to us six or seven cases of epithelioma on the face which he had cured with the X ray. He was repeating merely an experience which I had had myself, and which I recently described in the *Medical Record* of March 8th of this year. This is apropos of the paper to this extent,—the treatment and cure of that abscess,—otherwise I might not speak of it so long.

As the paper went on, this physician seated next to me expressed the utmost skepticism; said it was impossible to cure cancer, etc. In a very few minutes we produced before him a case of sarcoma, on the side of the head, which had been as large as a cocoanut. The case of sarcoma had been five times to the New York Hospital and operated on, and in every instance microscopic sections had been made. The patient finally asked for another operation; he was told that it was of no use to operate, and the X-ray treatment was given. His face is as smooth as a child's and the sarcoma is cured. This case was cured by Dr. E. A. Fisk, of Brooklyn. So you have your authorities near at hand for therapeutic work.

I then exhibited a case of my own which was similarly cured. I have under care at present four cases of the tongue, throat, and posterior passages, and every one of them is almost healed and doing well. From this point of view it is extremely interesting to outline to-day that in your profession, where you come across these cases of epithelioma,—I do not mean little cases of carcinoma of the skin, which can be scraped out, but the angry cases of epithelioma or carcinoma, which are going into deeper tissue,—that you have a therapeutic power behind you which you can use to cure those patients.

My suggestion to-night would be to any of your profession who are now treating diseases of the mouth, that they do not neglect the hint I am now putting forth, because I am finding in my practice it is one of the most remarkable curative agents I have ever found. If any of you will go to work with the X ray on pyorrhea cases, and cases of inflammation, subacute and chronic, you will have a field before you which will astonish you and will be a work worthy of the next year's time, and lead to far more important results in the dental profession in the cure of disease than anything ever introduced, except the measures for the relief of pain.

Perhaps I have spoken a little too long. My purpose is to discuss as closely as possible the address. I do not know of anything I can add in the way of detail to what Dr. Van Woert has brought forward. I would like to double or treble his distance, so far as getting the pictures is concerned. I think a static machine that runs at 900 revolutions and keeps its charge is very good. A static machine is just as good for producing the X ray as any other machinery. I suppose sometimes you use larger machines for other purposes?

Dr. VAN WOERT. For my purpose this is all I-use.

Dr. MORTON. In conclusion I can only say that I am greatly indebted to the essayist for giving us an extremely practical and interesting presentation of the subject. I think it takes more judgment to know what to leave out than what to put in, and I am sure Dr. Van Woert exercised most excellent judgment in leaving out a great deal and only putting in what proved to be of immediate interest to all of us.

The PRESIDENT. Would Professor Morton give us some idea of his practical treatment in our specialty? We would like to have some little instruction as to how often to treat and how to arrange it.

Dr. MORTON. I would very gladly have done that, had I not felt I was trespassing on your time or going outside the scope of the essay; that was my only reason. If you would like me to take a single case, as has been done to-night, it carries the point and the logical deductions with it. One of your *confrères* came to me not more than two weeks ago with a patient, stating he had recently extracted an upper molar tooth in a case of pyorrhea; that within a few days later he extracted an upper second molar tooth for pyorrhea; within two or three days after that, instead of its being a case of pyorrhea it turned out a case of very virulent epithelioma. It was then that microscopic examination was made. The alternative to the patient was a terrible one. The entire upper maxillary portion on the one side was involved, and this angry disease had crossed along the posterior fauces and had now invaded the buccal cavity of the cheek. There was a hard mass here, and infiltration. The question was, Could anything be done with the X ray? The man was terribly afraid of the operation, which would have been a very severe one. It is very difficult to perform any operation which is ultimately successful in those cases, and very few are cured. They die sooner or later by a recurrence or springing up again of the disease.

I said: "We will try, and I think we can arrest the progress of the disease, reduce it, etc." I said that because I had cured several cases of epithelioma with the X ray. The patient was placed before the tube, as you saw to-night. My tubes are larger, but this will do as well as any. A large lead mask was placed directly over the face. A hole was made, large enough for the mouth, and a cork put between the lips. The X ray was directed over what we will call the center of the tract, and directed exactly against the epithelioma. I made the applications three times a week. Four times makes overlapping days, and three times does very well. You can give three treatments a week,—or four or daily, not so strong. The great danger in all these cases is dermatitis, or "burning" of the skin. I will first speak of what occurs in these cases of epithelioma. The whole roof of the mouth was like raw beef, glazed and angry-looking. After three treatments, a serpentine line of demarkation ran over the palate, so the gentleman who was with me could observe it, and the epithelioma had differentiated itself from the tissue, which meant the progress was arrested. From that time on, the angry look disappeared, and the mucous membrane

became pinkish, as it should be. At the same time the pain subsided and the burning and stinging feeling vanished.

In cases of cancer where there is terrible pain, the pain disappears at once. The relief from pain is one of the most remarkable features. If you have diseases accompanied with pain, I assure you the pain would be relieved in from five to six minutes after application. I call that machine to-night pretty powerful when it takes a negative like that in thirty seconds. Ten inches distance, six or seven minutes application, three or four times a week, and I think most cases of pain will be relieved. I am treating cases of appendicitis in that way, and pain disappeared after the first treatment.

I have taken cases of carcinoma in women, where the pain was excruciating, and from the very first treatment the pain has subsided, and the woman said, "I can talk," "I can take a long breath," or "I can raise my arm." And that effect lasts longer, as I said at the Academy of Medicine, and is of more effect than a hypodermic injection of morphin. The X ray can relieve in many instances more effectually and have a longer effect than morphin can. That is a strong statement. We walk along and walk blindly, and do not see things lying directly under our noses. You gentlemen have been working with the X ray and have been working blindly, the same as I did. The time comes when our eyes are opened, and it seems as clear and natural as if we had always known it.

You will say, Dr. Morton must be over-enthusiastic. It is not so. The ability to relieve pain exists in the X ray as in any narcotic. It is applicable to the cases of neuralgia, to the cases of tic douloureux and appendicitis, and to the excruciating and torturing pain of cancer. I think it is due to the paralyzing effect on the sensory nerves.

Some of these opinions I expressed a week ago last Saturday, in the *Medical Record* of March 8th.

As to the technique, I can only say that it depends upon these two points: Is the cancer or the disease to be treated superficial, or is it covered by sound skin or sound mucous membrane? If it is superficial, and the X ray can be played directly into it, through a glass funnel covered with metal, or through any deflecting device that will throw the X ray on to it or directly upon it so it will impinge directly upon the ulcer, then the treatment is very plain; but if the sound skin or mucous membrane covers the disease we are met with the difficulty of protecting that skin. Everybody is afraid, and naturally, of producing an X-ray burn. Everybody has seen those burns, and knows how long they take to heal,—longer than any other known in practice. I was cautious at first; I am not a reckless driver, but I go right ahead now around the curves and dangerous spots, because I know those places and am not afraid of them any more. If you are learning to row, in your youth or older age, and go on the Hudson river on a hot July day, with your pride and ambition to get tanned like a red Indian from your shoulders down; if you stay out half an hour or an hour in that hot sun, when you come back the sunburn or dermatitis would be terrible; but if you go out and stay five minutes one day and five minutes the next day,



by and by you get the desired color, the intense black tan without any trouble or burning. You have set up a great pigmentation without dermatitis. It is the same with the X ray. After the first two weeks one may push the treatment with a great deal of energy, without so much danger of burning the patient,—that is, in my experience,—keeping always a distance of ten to twelve inches, and using a hard tube. In other words, the patient's skin tans where the skin intervenes, but I do not get the burn. I always get a slight dermatitis; you accustom the tissue gradually, and it accommodates itself to its environments gradually, and does not get hurt.

There is one other word I would say: The workers with the X ray divide the tube into the soft, the medium soft, and the hard. It is not a very accurate division, but it answers for the work. The soft tube is of very little value in this treatment. The medium soft tube I seldom use. The point, I think, is to use the high-vacuum tube and run it moderately low, so as to show in the fluoroscope a blurred and confused picture. Dr. Van Woert wants to get a well-defined picture, but in therapeutics you want a picture that is blurred and confused. You have noticed that, have you not, Dr. Van Woert? You get a very blurred picture, but very penetrating.

Dr. VAN WOERT. Yes.

Dr. MORTON. The soft tube will burn the patient, and produce ulceration; but the hard tube is not so likely to burn.

Dr. VAN WOERT. How long an exposure do you give?

Dr. MORTON. The first two weeks you feel your way; the next two weeks you force your way; and I am always reminded of the inscription upon the temple at Delphi, "Be bold; be ever bold; be not too bold." That is about the way with the X-ray therapeutics. Feel your way along the first two weeks, and get the skin tanned; then force the treatment. Sometimes I think my patient will come back the next time very badly burned, and they come back and say, as one of mine did the other day, "No, doctor, I am not a cinder yet."

As I said when I began, you stand upon a more important threshold of progress in stomatology and in the treatment of all those mouth diseases than you did at the time we first took up the X ray for making radiographs.

The PRESIDENT. We have with us Dr. Dwight M. Clapp, who has done a great deal in this line, and we would be pleased to hear from him.

Dr. DWIGHT M. CLAPP. It is very kind of you to think that I can add anything to what has been said. I am sure the gentlemen would be much more interested in seeing the negatives developed than in hearing anything I can say.

Dr. EVANS. Has Dr. Van Woert had any experience in the therapeutic use of the X ray?

Dr. HILL. I think we are getting away from the essay, and I move that we proceed to have the pictures developed.

Dr. VAN WOERT. I think we can afford to go astray a little from the subject after what Dr. Morton has said, for I am sure it is very much more important than what was intended to be pre-

sented. What has been brought out in the discussion is worth more than what has been said about radiographs.

In the case I mentioned, where the recovery of the patient was coincident with the use of the X ray, it was accidental on my part, as I knew nothing about it; notwithstanding which the gentleman insisted that it was the X ray that cured the alveolar abscess, and I am now inclined to believe he was right.

I have never done anything in this line of treatment, but proposed to give a practical demonstration of making radiographs. Further I might say that the object in not trying to make a clearer picture by carrying the tube farther away was because it lengthens the exposure and necessarily makes the patient more apprehensive and I could not see the actual gain. The object sought was gained, —to see if there was or was not a tooth in that location. As long as that is accomplished, I cannot see the necessity of making beautiful pictures. If it were a picture to hang on the wall it would be different. What I aimed to do was to get a practical result in as little time as possible, without beautifying or magnifying, as it were. The question brought up later by Professor Morton is so much more important than that of making pictures that it is worth our while to very seriously consider it. I have read a great deal of the treatment of cancers, and all that, by the use of the X rays, and we have a gentleman in Brooklyn who has a very elaborate outfit and claims some very marked success in that line. I never dreamed of its application in dentistry, because we are not treating epithelioma; but if this alveolar abscess was cured by the application of the X rays, it is time we tried it. If you can relieve pain by the application of the X ray in an ordinary case of toothache, or if you can relieve or benefit a case of pyorrhea alveolaris by the application of the X ray, it is time we began, and those of us who have the apparatus should start in at once. I sincerely hope something will come out of this. It is not possible for a man of Dr. Morton's standing to make so positive a statement if he did not know what he was saying, and I believe I am warranted in going ahead to-morrow morning and trying it.

Dr. OTTOLENGUI. Dr. Van Woert, in the course of his discussion, said that when negatives were folded with the film sides together, he got better pictures. Were both pictures better?

Dr. VAN WOERT. Yes, the negatives were clearer.

Dr. OTTOLENGUI. That is what I supposed he meant, and that is why I spoke of it jokingly when he mentioned it, because one of the pictures presents with the film side toward the X ray and the other presents in the reverse way, and consequently there would be no adequate reason why they should both be better. Dr. Dills said one was better than the other, but he never kept track of which one. I want to explain why I asked that two pictures should be taken, because it brings up a practical point. We are not dealing with photography in the full sense. Lenses are not used, and negatives are not made, strictly speaking. That has not been very clear in people's minds. They have been called negatives, and have been used as such, but you are simply interposing something

between a source of light and a sensitive film and throwing a shadow upon the latter. That was practically the original experiment in photography, which simply produced silhouettes, and it is simply shadowgraphing or radiographing. The film itself is really a *positive*; that is to say, the film itself gives the accurate reproduction of what you are trying to get. It is my experience that any picture printed from that film is not so good for diagnostic purposes as the film itself, especially as the film enables you to look at it with the light passing through it, and you see fine details which are often lost after you print a picture from it.

I am a little surprised that with all Dr. Van Woert's prepared film, he does not include one or two pieces of bromid paper. It has been my experience with pictures so taken that they will have better detail and have more diagnostic value than any printed from the film.

That brings me to the object of having the picture to-night taken in two ways. When printing in photography, the longer the exposure, the longer the printing, the darker the result. If you have what we call half-tones, or less than half-tones in your negative, you can lose them by printing for a long time. Applying that principle to radiography, it would depend upon what you are trying to get. We were trying to discover in this instance not where a solid substance was, but whether there was a space caused by abscessed tissue, and caused by the obstruction of bony tissue,—practically a vacuum. If there is a space there, and we pass the X ray through it, the ray will pass through more rapidly than it would through the bone which has not been disintegrated; but if you continue the exposure long enough, if you print your picture long enough, you will pass it sufficiently through the denser portions of the bone, to use such an expression, to "catch up" and obtain a uniform, dark picture throughout.

We printed in our magazine eighteen or twenty pictures of abscesses made by Dr. Price. I tried to obtain from him his method of getting such good reproductions of the abscessed areas. On the ground that he was writing a book, and that I would sometime see the book, I was asked to wait. The brief exposure, however indistinct the rest of the picture, gives that differentiation between the normal bone and the diseased area; and if there is any abscess at the end of the root, it is certain in my mind that it will show best on the picture that had the briefest exposure.

Dr. CLAPP. My experience has been exactly that which has been detailed by Dr. Van Woert. If I were to say anything, it would be to speak about some things that he has not mentioned; perhaps the thing that is most noticeable is the experience required to read these negatives properly. It requires much experience to pose the patient to get the proper shadow. It is easy to make a mistake. I have negatives taken at different angles which show altogether different results and show the necessity of the greatest care in the posing of the patient, and also the studying and reading of the negative.

In some of the first work I did, a case which has been published, I



found an instrument that had been pushed through a dead central and left in the bone,—the end of a Gates-Glidden drill, half an inch long, having remained in the jaw for a year, causing a very bad abscess. The patient was sent to me to see if I could locate the instrument. One negative I took showed absolutely that the instrument stuck right out through the end of the central. Another one showed just as clearly that it was half way between the central and the lateral. It was subsequently shown that the one showing the instrument between the teeth was the right one. It had been shoved through the tooth, and in the process of the abscess breaking down the tissues, or something else, it had gone to one side.

I have a very peculiar case, of which I made some exposures about two years ago, a case that has been published, in regard to the finding of a large sac of supernumerary teeth. There were seven teeth in this sac; seven distinct teeth or distinct pieces of bone. One negative, taken after the supernumerary teeth had been removed, showed that in the place of the lateral there was a bicuspid. By the way, the temporary canine had never been erupted, but the negative,—of which I have a slide here, thinking that it might be of interest,—shows as fine a shadow of a bicuspid as you would wish to see. This little girl came to me last night, and she has now a perfectly erupted temporary canine and a permanent lateral, and the negative I made last night shows that the permanent canine is in the jaw. The other negative I took some two years ago. This shadow, representing a perfect bicuspid, was caused by the temporary canine overlapping the temporary lateral, the two together showing an absolute shadow of a bicuspid.

I throw out these suggestions simply to show that it is not an easy thing to determine what you have in the jaw after you get a shadowgraph of it.

Dr. OTTOLENGUI. I want to make a report on these developed pictures. They are exceedingly interesting as having discovered all we started out to learn. The picture taken in thirty seconds is twice as good as the one taken in a minute. It shows what we were seeking to know. The abscessed area shows to some extent on the one-minute picture, but it shows much more distinctly on the other.

Another point of interest is this: I said somewhat in jest that Dr. Van Woert had first failed to cure this tooth, and then that Dr. Rhein cured it and it had broken out again. These pictures show absolutely perfect root-filling, even passing around a double curve. There has been no absorption of the root, nevertheless there is an inflammatory area at the end of the root where the tissue has been destroyed. For diagnostic purposes you could not have obtained a better answer to a very big problem such as the one in my mouth, than Dr. Van Woert has given us to-night.

Dr. RHEIN. While I did not intend to discuss the question before us this evening, as the last operator upon this tooth I think I can probably throw more light upon the clinical conditions, as represented in these beautiful pictures, than anyone else. I have a very distinct recollection of the exact nature of the work performed

here,—a thing I do not always have after any such length of time; but the case of Dr. Ottolengui was so peculiar that it gave us a great deal of trouble, and every detail is vividly impressed upon my mind. The question before me, when I operated on this central incisor, was a difficult one to answer: Was there any pulp tissue left at the end of the root when I undertook to relieve him of the trouble in the root-canal of this central incisor? In passing up a probe, it was very difficult to decide whether an ordinary broach passed through the root had encountered soft tissue that was very painful, or whether it entered into some remnant of pulp tissue that had not been removed. Dr. Ottolengui finally tried to convert me to the theory that there was pulp tissue there, and I was always firmly convinced that we would pass through the root into the soft tissue, but this was not a normal soft gum tissue. The circumstances surrounding the operation led me to adopt Dr. Ottolengui's view, he being the patient and I the operator, that there was some pulp tissue left in the end of the root, and that the removal of this tissue was what was needed. We used at the time cocain cataphoresis to produce anesthesia there, and as it thoroughly anesthetized whatever soft tissue was there it did not help to elucidate this question of diagnosis. After looking at the picture to-night, and having a clear idea in my mind of the length of the probe that passed up there, I am convinced that that root was open at that time, and that we passed through the root into an area of tissue that was not normal. After recognizing the fact that the area was not normal, we proceeded to destroy whatever tissue there was in the apical area by electrical action of pure zinc, producing nascent zinc oxychlorid and destroying as much tissue as possible. The result was undoubtedly very efficacious at the time. The amount of tissue which it destroyed was accompanied with such pain as to necessitate a morphin application to alleviate it over the tissue that was cauterized by the zinc application. The whole question was whether all that tissue was removed or not, and whether there was any necrotic area on the outer periphery of the tip of the root. I am led to believe, from the appearance of that picture to-night, with the history of the case all the way through, that the cauterization was effected, but that there was, and is, a slight necrotic area on the extreme tip of the outer periphery of the root which, however minute it may be, will lead to further trouble until it is surgically removed.

I simply want to get the history of the case down so we can have a better idea of it.

Dr. EVANS. Was there any fistula to this tooth?

Dr. RHEIN. No.

Dr. EVANS. And you put this zinc oxychlorid up there?

Dr. RHEIN. Yes.

Dr. OTTOLENGUI. I do not think there is any abscess at all in the apical area. I think the abscess is much farther down. I think it is about one-fifth down the root.

A question has been asked, What is the line that appears at the end of the tooth? It must be in the mouth, because it appears on

all four negatives, and cannot be an accident. There was an open abscess and a discharge of pus, and that was drained afterward; consequently we had a fistulous tract, and I think that has filled in with bone. We know that secondary deposits of bone have less canaliculi and are more dense.

Dr. RHEIN. When was the fistulous opening?

Dr. OTTOLENGUI. A year ago. I am very proud of this tooth now, because it was first used to prove the efficacy of cataphoresis; then to prove the efficacy of the electrolytic use of nascent zinc chlorid, and now it has been used as a demonstration for the X-ray picture.

Dr. VAN WOERT. I had no intention of going into the theoretical part of this work at all, proposing simply to give you practical demonstrations and tell the practical working in making radiographs, which, as you can readily see, has been somewhat of a success. I thank you very much for your courtesy.

A vote of thanks was tendered to the essayist and those gentlemen who took part in the discussion.

Adjournment.

ELLISON HILLYER, D.D.S.,  
*Editor New York Odontological Society.*

### PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS.

THE Pennsylvania Association of Dental Surgeons held its fifty-sixth annual meeting on the evening of October 14, 1902, at the Continental Hotel, Philadelphia. The following officers were elected to serve during the ensuing year: Wilbur F. Litch, president; Geo. W. Cupit, vice-president; J. Clarence Salvas, secretary; Wm. H. Trueman, treasurer and librarian.

During the past year the following papers were read and discussed before the society: "Combination Fillings," by Joseph Head; "Obtundents," by Chas. S. Moore; "The Difference in Method of High- and Low-Fusing Porcelain for Filling Teeth," by W. A. Capon; "A Practical View of the Plastics," by J. Clarence Salvas; "Alveolar Abscess, its Complications and Treatment," by J. F. Wessels; "The Danger of Infection of the Eye of the Dentist while Operating," by Wendal Reber, M.D.; "Calcification of the Dentin and Enamel and its Relation to Hypersensitiveness of These Tissues," by I. N. Broomell; "Adenoids and their Relation to Oral Deformity," by M. I. Schamberg; "A Sketch of Edward Hudson," by Wm. H. Trueman; "General and Local Anesthesia, with Special Reference to its Application in Operations Within the Mouth," by E. Quinn Thornton, M.D. J. CLARENCE SALVAS, *Sec'y.*

### SOUTHWEST VIRGINIA DENTAL SOCIETY.

THERE was organized at Roanoke, Va., on September 5, 1902, the Southwest Virginia Dental Society. Chaplain H. Carson, Roanoke, Va., is president of the society, and Richard L. Simpson, Fincastle, Va., secretary-treasurer.



## HARTFORD DENTAL SOCIETY.

At the annual meeting of the Hartford Dental Society, held on the evening of Monday, October 13, 1902, the following officers were elected: J. Warren Harper, president; Edward Eberle, vice-president; E. R. Whitford, treasurer; A. W. Cowee, secretary; F. D. Clark, librarian and curator. Executive Committee—E. B. Abbey (chairman), T. K. Starr, A. E. Cary.

A. W. COWEE, *Sec'y.*

## THE MARITIME DENTAL ASSOCIATION.

THE Maritime Dental Association is composed of members of the profession resident and practicing in the province of New Brunswick, Nova Scotia, and Prince Edward Island, and was formed for their social and intellectual development. It was organized August 30, 1900. It is not incorporated and has no legal status, and is a separate and distinct organization from the local societies of New Brunswick, Nova Scotia, and Prince Edward Island.

The meeting in Charlottetown, P. E. I., July 9 and 10, 1902, was very successful and instructive, and productive of much good to the profession in the maritime provinces. It was held at the same time as the Maritime Medical Convention, and resulted in the promotion of a more fraternal feeling among the members of the two professions.

Among the visitors were Dr. J. B. Wilmott, professor of operative dentistry and dental prosthetics in the Royal College of Dental Surgeons, and dean of the faculty; Dr. A. E. Webster, editor of the *Dominion Dental Journal*, professor of orthodontia and demonstrator of operative dentistry and technique in the Royal College; Dr. Eudore Dubeau, secretary of the Quebec Dental Association; Dr. Lawrence Baker, teacher of orthodontia in the Harvard Dental School; and Dr. L. H. Naylor, of Newton, Mass.

The essays of Dr. Webster, on "Preparation of Cavities" (illustrated by models); Dr. Dubeau, on "Identification of the Dead by the Teeth"; and Dr. Baker, on "Facial and Dental Harmony" (illustrated by charts), were much appreciated, and many valuable points were brought out in the discussions.

For the first time in the history of dentistry in Canada a joint meeting of members of the medical and dental professions was held, and proved most interesting and profitable to those in attendance.

Essays were read by Dr. James Magee, of St. John, N. B., a member of the New Brunswick Dental Society, and Dr. J. R. McIntosh, also of St. John and a member of the New Brunswick Medical Society. Dr. Magee's essay dealt with "The Mouth as an Index of Disease," and was ably discussed by members of both professions. The meeting was only too short and allowed no time for the discussion of Dr. McIntosh's paper, on "Diseases of the Eye and Ear in Relation to the Teeth." The remarks, however, during the discussion of Dr. Magee's paper showed that the feeling existing between the two professions in the maritime provinces was all that

could be desired, and the desirability of meeting occasionally in joint convention and discussing subjects of common interest to the M.D. and the D.D.S. was generally expressed.

The social entertainment provided was very enjoyable, and consisted of an "At home" at Government House on Wednesday afternoon, and a "drive out" and smoking concert on Thursday afternoon and evening.

The next convention will be held in Halifax in 1904, at the same time as that of the Maritime Medical Association.

---

### CANADIAN DENTAL ASSOCIATION.

At the first meeting of the Canadian Dental Association, held in Montreal, September 16, 17, and 18, 1902, the following officers were elected for the ensuing year: J. B. Willmott, Toronto, president; Eudore Dubeau, Montreal, vice-president; W. Cecil Trotter, Toronto, secretary; Frank A. Godsoe, St. John, N. B., treasurer; S. W. McInnis, Brandon, Manitoba, registrar. Executive Committee—W. D. Cowan, Regina, N. W. T.; Frank Woodbury, Halifax, N. S.; J. S. Bagnall, Charlottetown, P. E. I.

W. CECIL TROTTER, *Sec'y*,  
Bloor st., W., Toronto.

---

### THE STATUS OF DENTISTS IN THE NAVY.

#### AN APPEAL TO THE DENTAL PROFESSION.

*To the Members of the Dental Profession and to Dental College Faculties:*

The status to be accorded by Congress to navy dental surgeons is a matter of such immediate and far-reaching importance to the dental profession and dental educational institutions that the Committee of the National Dental Association, to whom this subject was committed, most urgently invokes your assistance in impressing upon the House and Senate Naval Affairs Committees the justness of the claim for the commissioned status proposed by the Senate Bill No. 5419 and the House bills Nos. 13,968 and 13,971, offered respectively by the Honorables Edmund W. Pettus, of Alabama; Walter P. Brownlow, of Tennessee, and Charles F. Joy, of Missouri.

The three grades of rank provided by these bills correspond with the three lower of the six grades of medical and pay officers.

There is but one question, that of status, with which the profession and its educational institutions are especially concerned. The navy's need of dental service is now nowhere denied. Navy Department officials admitted the need four years ago and later felt it so imperative as to warrant the unauthorized appointment of dentists to the undignified positions of yeoman and hospital men under special agreements and detailing them to do professional

service. As the proper officer failed to report the need through the Secretary of the Navy to Congress, and for a time deferred and finally declined to confer with the representatives of the dental profession as to the terms of a bill, we were forced to act without his concurrence and accept the oft-repeated suggestions of senators and representatives that we prepare suitable bills.

The Navy Department, in a letter to the Naval Affairs Committee of the Senate, January 29, 1902, disapproved the rank and the tenure of office we proposed, and instead proposed that fifteen dentists for the naval service be examined, appointed, and removed "at the pleasure of the Secretary"; that they be rated as ensign without right of promotion, while their pay should be increased from \$1500 per year at entrance to \$3000 per year after fifteen years' service. This unique proposal for the appointment of officers was preceded by a reference to the army contract system of employing medical and dental officers, and the following very pertinent comment: "The contract system of employment of officers is, however, foreign to the naval practice, and its adoption in the case of dental surgeons is not deemed advisable, as some of these officers, if any be appointed, may be required to serve on board ships where, it is thought, all persons should be a part of the regular naval establishment."

Notwithstanding that this important statement expresses the often-emphasized and reiterated policy of the Navy Department, the present Surgeon-General, under date of October 16, 1902, recommends to the Secretary of the Navy that Congress be asked to provide for CONTRACT dentists to serve under the control and direction of the Bureau of Medicine and Surgery.

The bill providing contract dental surgeons for the army, "under the terms and conditions applicable to army contract surgeons," was from expediency made consistent with a system which, by rules and regulations, gave the several hundred contract medical officers social, professional, and official equality with the smaller number of commissioned officers then provided for by law. The Surgeon-General of the Army has since recommended commissioned rank for army dental surgeons consistently with a policy and purpose expressed a year or more before Congress provided for their employment by contract. It is utterly impossible for contract dental surgeons to have the same status in the navy they now enjoy in the army, because the conditions differ widely, and "the contract system is foreign to the naval practice,"—so foreign that the then Surgeon-General and the Bureau of Navigation, Secretary Long concurring, deemed its adoption in the case of dental surgeons inadvisable. From the standpoint of the dental profession, its educational interests and civil status, nothing less than the commission rank we ask can ever be deemed just and reasonable, or anything short of an unfair discrimination against the educated dental surgeon.

Since the rejection of proposed chairs of dentistry by medical colleges sixty-odd years ago the unparalleled development of dentistry as a learned profession has had no opposing influence so



potent for evil and so fraught with disparagement of the importance of the function of the dental surgeon,—disparagement of the value of his educational equipment and disparagement of the grade of his profession status in civil life,—as that disclosed by the attitude of the Navy Department. A simple statement may make clear that thrice-changed attitude. The present-day graduates in medicine and dentistry hold diplomas from co-ordinate departments of our great universities or other educational institutions, having had for a large part of their course the same professors, the same lectures, and the same laboratory training. The one is recognized as entitled to military rank and all that rank in military service implies. He accepts the rank, enters the service, and finds himself unqualified to compass the range of the healing art which the service demands. He calls for the other who is qualified to meet his lack, but says, in effect: Sir, the personnel of the navy require your professional service, but Congress in considering the matter of status finds that the Navy Department rates you as yeoman or hospital steward at \$60 per month. This handicaps your profession's effort for such rank as medical and pay officers are more than willingly accorded, and your profession's claim for rank is met with a counter proposition by the terms of which you are rated as ensign and placed and continued "at the pleasure of the Secretary" in a position inferior to the lowest grade staff officer, without the substantial benefits of commissioned rank, but with the single inducement of such longevity increase as will make your salary over-leap that of a surgeon with rank of a commander and equal period of service. Further, the committees of Congress having hesitated to defer to the Department's recommendation, and permitted their attention to be called to the Department's inconsistent departure from the oft-affirmed policy of making rank and pay the index to the relative importance of an officer's duties, and to his social, professional and official relation to each and every other in the service, "The Bureau therefore recommends that Congress be asked in the coming session to provide for the employment of CONTRACT dentists."

Whether Secretary Moody will, at the instance of the chief of the Bureau of Medicine, adopt in the case of dental surgeons the "contract system" repudiated in Secretary Long's letter of January 29, 1902, as "foreign to the naval practice," is not likely to be known before Congress meets. It will, therefore, be absolutely essential, in order to protect the very important interests of the profession, to show the Naval Affairs Committees the ground on which we base our claim for commissioned rank. We, therefore, ask you—

*First:* To obtain and send to the undersigned letters from men prominent in educational affairs, such as university or college presidents, superintendents of public instruction, regents of universities, etc. By way of suggestion as to what kind of letters are needed, there are herewith inclosed copies of letters from Presidents Eliot, Harrison, and Greene.

*Second:* To obtain from medical members of dental faculties,

and other prominent physicians and surgeons, letters in support of our claim for commissioned rank based on the scientific education and important function of the educated dental surgeon. The letters should be addressed to "The Naval Committee, House of Representatives," and *sent to the undersigned*.

*Third:* To bring to bear on the individual members of the Naval Committees all the influence in favor of commission rank that you can either directly or indirectly through other members of Congress.

*Fourth:* To secure the representation of the Dental Faculties Association by one or more of its members at the "hearing" expected to be granted by the House Naval Affairs Committee about the 13th of December.

*Fifth:* To aid in securing the presence of a prominent university president at the above referred to "hearing" to represent the universities having co-ordinate medical and dental departments. To accomplish this most effective means of influencing favorable action by the Naval Committee, the N. D. A. Committee or National Faculties Association officers will secure the attendance of an influential university president and fill in his name on all the inclosed blank proxies which may be signed by chief university officers and returned to the undersigned.

This scheme may appear elaborate and unnecessarily aggressive, but those who are familiar from experience in pressing the contention for simple justice to the various interests involved beg to assure you that the profession and the educational institutions directly concerned must join in a concerted effort or else risk an ignominious defeat. Defeat means too much to leave to another anything you personally can do to protect the profession's honorable civil status. This is not a contention of our own seeking. It was thrust upon us by the Navy Department in the absence of legislative authority, giving a military status to a profession wholly inconsistent with its civil status, and in no respect commensurate with the important character and value of the service demanded nor with the educational standard approved by the American Medical Association in prescribing the qualification for its membership, nor with the educational equipment of the present-day graduate in dentistry.

Nothing is settled until it is settled right, and our appeal from the Navy Department is to the Naval Committees of the House and Senate,—the House Committee probably acting early in the session and before the Senate Naval Committee acts. Let us then appeal earnestly to the House Committee to treat the dental profession as it treats other professions in the military service, because other treatment will necessarily degrade the high professional status of the American dental surgeons of this and other countries, affect harmfully the educational institutions, deter the better-fitted young men of this and other countries from entering dentistry through the high-standard American dental colleges, and otherwise lower the respect in which American dentistry is held throughout the civilized world.

All matter for use with the Naval Committee should be placed

in the hands of the N. D. A. Committee *early in December*. We earnestly ask information in the meantime as to what is being done for the cause.

Respectfully,

WMS. DONNALLY, D.D.S.,  
Sec'y N. D. A. Committee,  
1022 Fourteenth St., Washington, D. C.

---

## EDITORIAL.

---

### A SUGGESTION IN DENTAL EDUCATION.

A VALUED correspondent writing upon the education of young men for the practice of dentistry states that "The dental schools are preparing and turning out into the world each year thousands of graduates who, like their predecessors, have not been fully prepared to meet in an ideal way the demands of their professional practice."

His statement is not an expression of the ordinary threadbare criticism that dental colleges are not doing their duty in properly educating men for practice, as it is further qualified by the admission that dental teachers in general are endeavoring to furnish their students with an equipment of knowledge and skill which will not only make of them acceptable practitioners, but successful men. He contends, however, that notwithstanding the best efforts of teachers under modern methods of instruction, there is much yet to be done in the improvement of our educational system in developing the natural qualifications of the student so that he will be a success in the full meaning of that term, and suggests that because of the necessarily specialized viewpoint of the teacher, a side light could be advantageously thrown upon the question of dental education from the personal experiences of the veterans of dentistry who in solving the problem of professional success have learned, if not the best way, at least a good way to attain the objects of a thorough professional training.

Perhaps no question has been so generally considered in dentistry as that of how to make successful dentists. Not only those engaged in teaching, but the practitioners of dentistry as well have found the subject of dental education a fruitful topic for discussion. In the suggestions of a multitude of counselors and as the result of experience has been developed a variety of educational methods each representing a more or less concrete conception of dental practice for which the particular system of education is intended to fit the graduate. The problem has its local and its national relations, and since the creation of the International Dental Federation



it has acquired an international aspect, the outgrowth of a keen desire to sift out and correlate the best factors in the several educational systems with the object of unifying them upon a higher plane of efficiency. This unceasing tendency to revise the educational methods in dentistry is its most marked evidence of healthful growth and the most hopeful indication that the adaptation of educational means to the ends of successful practice is to be more accurately wrought out as experience grows and time goes on.

The most striking change which has occurred in the educational problem in recent years is that which recognizes the utilitarian character of education. Centuries had to pass before the spirit of the scholasticism of the middle ages that regarded education as an intellectual adornment was compelled to give place to the modern idea that education to have any value in the practical business of life must be utilitarian in character. When forty years ago Herbert Spencer asked his epoch-making question, "What kind of knowledge is of the most worth?" it came with a shock of surprise to the majority of individuals educated under the prevalent systems, whose thought for the first time was awakened to the realization that any education could have worth of any kind beyond that of a mental decoration. Notwithstanding the radical changes which have been wrought in all educational systems since the idea of utility as an end in education has taken root, the ancient scholastic idea still manifests its vital tenacity to some extent even in the curricula of our modern dental schools, by the introduction of subjects which have but a remote bearing upon the objective feature of the course, namely, the making of dentists. And it is also true that the same objective feature is too often overlooked or neglected by the teacher. He is in some instances more concerned in impressing his class with the profundity of his own learning than with imparting to them the knowledge that will set them well on the high road to successful practice.

The survival of the spirit which characterized the scholasticism of the middle ages is further evident in the motive of much that masquerades under the title of dental education. It is the same conception, rehabilitated in modern dress, that education is essentially a means to respectability, and not primarily to practically useful ends. The spirit of medievalism which monopolized and safeguarded learning as the divine right of a privileged few was the surest means of creating a class distinction between those who had access to the sources of knowledge and the lower classes who were deprived of educational opportunities, thus giving to the educated classes a social distinction and power impossible to the uneducated.

To be educated was to possess the advantages of power and social respectability. While the conditions have changed with the progress of civilization, the same spirit exists as an element of human character which exerts its modifying influence upon the problems of our professional education.

In dentistry from its earliest history as a profession the effort to improve the social and professional respectability of its practitioners has been constantly made and has proceeded along two distinct lines: First, by importing into our professional equipment all the knowledge and paraphernalia of organization which it was believed gave character and respectability to medicine as a profession, in order to help dentistry to a place in the social and professional scale on a parity with that which medicine had already achieved for itself. Second, by frankly conceding that intrinsically the field of dental study and investigation was broad enough to merit an honorable place for itself among the professions, and that the intellectual attainment derived from a thorough knowledge of all that the science and art of dentistry contained was amply sufficient to win for itself a worthy place in the general regard.

The first conception implied the advancement of the status of dentistry upon borrowed capital; the second, upon its own merits.

The application of these principles to the question of dental education is fairly clear, and it is evident that it is no longer needful for dental educators to import into their teachings anything which does not directly bear upon the objective point of dental education, viz, the making of dentists. We note with increasing satisfaction the tendency to eliminate all those factors in our educational system which do not conduce to that end, and especially the aggressive attitude of our educators in combating the ancient tendency to make dentistry shine by any other light than that of its own making;—all of which we regard as evidence of a healthful growth toward higher ideals and a direct recognition of the general fact that the chief end of education is to do, not to know. Having grown into a better conception of the underlying principles of dental education, the present complexity of the problem is largely due to the lack of a comprehensive conception of the meaning of dentistry,—a definition for it that shall actually define.

Our correspondent whose letter has suggested these reflections states that there is a practical side to the matter which the schools have not fully realized,—a side represented by the experience of largely self-educated successful practitioners who in the continuous effort to solve the problems presented in practice have learned what they really needed to know as graduates, and what the college course

did not give them. He suggests that these men would be doing a service to dental education and to their professional *confrères* if they would write not only their experiences, but, based thereon, their views as to what kind of training both preparatory and professional would have best fitted them to cope successfully with the problems which their practice has presented. In other words, How would they have individually trained themselves for their professional work were they able to live their lives over again?

The suggestion strikes us as an eminently practical one, and we invite those who may be interested in this question to send us for publication their views upon it from the purely personal standpoint.

---

## BIBLIOGRAPHICAL.

---

THE CARE OF THE TEETH. By SAMUEL A. HOPKINS, M.D., D.D.S.,  
Professor of Theory and Practice of Dentistry in Tufts College  
Dental School. New York, D. Appleton & Co., 1902.

In this little brochure of 150 pages the author has presented an intelligent and thoughtful statement of the subject of dental and oral prophylaxis suitable for popular instruction. Unlike most attempts of this character, the local aspects of the problem are subordinated to the more fundamental constitutional aberrations of nutrition which play the part of predisposing causes to dental disorders. This is, we believe, the correct view of the situation, for *dens sana in corpore sano* is as true as is *mens sana*, etc. Consequently the author pays much attention to the importance of proper food selection and its preparation for stomach digestion through mastication, by which the stimulating effect upon the local nutrition of the teeth and their retentive structures is secured; but the further result of delivering to the stomach a well-selected and well-prepared pabulum is secured as an essential to proper normal nutrition.

Exception may be here and there taken to certain details of prophylactic practice advocated by the author, but in the main the principles advocated we regard as sound and trustworthy, and such limitations as the book may manifest in this particular are due rather to the present limitations of our scientific knowledge of the subject of which it treats.

We heartily commend this little book as one of the best of its class that we have seen; it is a work which every progressive practitioner can safely place in the hands of his thoughtful patients and feel sure that they will derive benefit therefrom.



## OBITUARY.

## DR. J. SEARLE HURLBUT.

DIED, of apoplexy, November 9, 1902, at his home in Springfield, Mass.,  
JAIRUS SEARLE HURLBUT, D.D.S.

Born in West Springfield, Mass., January 5, 1842, Jairus Searle Hurlbut was one of six children, five of whom were sons; of these, three died at the age of twenty-one. When he was ten years of age his parents moved to Springfield, and in 1860 he was graduated from the high school of that city. Soon afterward he entered the office of his brother, Dr. C. G. Hurlbut, Sr., with whom he was associated for several years as student and partner. He attended the Philadelphia Dental College, graduating with the class of 1865.

His health being poor, after his graduation he went to St. Paul, Minn., where he practiced for a year. In 1866 he returned to Springfield, Mass., and opened an office. Here he remained for twenty-seven years. In December, 1893, he removed to the Masonic Building in the same city, occupying a suite of rooms with his nephew Dr. Allis.

In the Connecticut Valley the name of Hurlbut almost suggests the word dentist, for three of Dr. Hurlbut's brothers and two of his nephews have studied the profession.

Dr. Hurlbut's reputation was national. Joining the Connecticut Valley Dental Society in 1866, he served the society as executive officer and president. He was a member of the Valley District and the Massachusetts Dental Society, serving this society as president, orator, and member of the executive committee. He was a member of the Northeastern Dental Association, the American Academy of Dental Science, the National Dental Association, and the New York Odontological Society.

On the passage of the Massachusetts state dental law in 1887 he was appointed by Governor Ames a member of the Board of Registration. From 1891 to 1895 he served as president of the National Association of Dental Examiners. In 1893 he was a member of the International Dental Congress.

It will be gathered from the foregoing sketch of a busy life that Dr. Hurlbut was studious, alert, and progressive from his early youth. As a doctor of dental surgery he stood in the foremost rank of his profession.

## RESOLUTIONS OF REGRET.

At a regular meeting of the Valley District Dental Society, held November 17, 1902, at the Norwood Hotel at Northampton, N. H., the society adopted the following resolutions on the death of Dr. Hurlbut:

"It is with deep regret that this society learns of the death of our esteemed fellow-member, Dr. J. Searle Hurlbut, of Springfield, on November 9, 1902, and we desire to express in a formal manner our appreciation of his life and a sense of the loss we have sustained.

"Dr. Hurlbut commenced the practice of dentistry in Springfield in 1865, having been graduated from the Philadelphia Dental College in that year, and during all these years has stood firm for the upbuilding of his profession. He was a member of the old Connecticut Valley Dental Society,—the leading dental society in New England,—from 1865 until 1895, when it was merged in the Northeastern Dental Association, in which his membership continued until his death. He became a member of the Massachusetts Dental Society in 1873, and was thus one of the original members of this, the Valley District Dental Society. He was also a member of the American Academy of Dental Science of Boston, of the New York Odontological Society, and of

the National Dental Association. He was honored as president by the Connecticut Valley Dental Society in 1873, and by the Massachusetts Dental Society in 1874. When the dental law was enacted in this state in 1887 he was appointed by Governor Ames a member of the Board of Registration in Dentistry. In 1891 he was made president of this board, which office he held until he resigned his membership in 1896.

"By his strong personality, his broadly cultivated views, his refined manner and dignified bearing, he was one of the leaders in influencing an intelligent public to that just appreciation of the dental profession which later years have witnessed.

*"Resolved,* That in the death of Dr. J. Searle Hurlbut the members of this society feel they have sustained a personal loss and the dental profession one of its eminent members.

*"Resolved,* That we extend to his wife our most sincere and heartfelt sympathy.

*"Resolved,* That a copy of these resolutions be sent to his wife, to the various dental journals, and to the daily papers.

"GEORGE A. MAXFIELD,

"C. T. STOCKWELL,

"N. MORGAN, *Committee.*"

The following resolutions were passed at a meeting of the Massachusetts Board of Registration in Dentistry on the death of Dr. Hurlbut:

WHEREAS, In the sudden death of Dr. J. Searle Hurlbut, which occurred November 9, 1902, the Massachusetts Board of Registration in Dentistry mourns the loss of one of the original members, who for nine years of its existence served with exceptional distinction, four years of which he was president;

*Resolved,* That as an examiner he displayed remarkable wisdom, fairness, and judgment, and showed wonderful tact in his dealing with men.

*Resolved,* That in his contact with his associates on the board, his kindness of nature and generosity of heart will always be remembered with the warmest affection.

*Resolved,* That we extend our sincere and heartfelt sympathy to his bereaved widow in this sad affliction.

*Resolved,* That these resolutions be entered on the records and a copy be sent to the widow of the deceased and to the several dental journals for publication.

(Signed)

JOHN F. DOWSLEY,  
GEO. E. MITCHELL,  
THOS. J. BARRETT,

DWIGHT M. CLAPP,  
GEO. A. MAXFIELD.

---

### DR. OLIVER JOHNSON.

DIED, of typhoid fever, August 21, 1902, at his home in Lincoln, Neb., OLIVER JOHNSON, D.D.S., in his thirtieth year.

Dr. Johnson, who died August 21st, after an illness of four weeks, was born March 26, 1873, on a farm in Lancaster county, where he spent his boyhood days. He attended the dental department of the State University of Iowa, being graduated in June, 1899, going at once to Lincoln, where he opened an office and where he was in practice at the time of his death.

The following year he accepted the professorship of crown- and bridge-work and orthodontia in the Lincoln Dental College, where he had already distinguished himself as an earnest student and competent instructor. He at once became an active member in the Nebraska State Dental Society, and those who attended the "1902" meeting will remember his appearance on the program and will learn of their loss in his death with regret.

Dr. Johnson leaves a wife and an infant daughter, born seven days prior to the date of his decease.

## REVIEW OF CURRENT DENTAL LITERATURE.

[*L'Odontologie*, Paris, October 15, 1902.]

## THE CEMENT TREATMENT OF PAINFUL CARIES OF THE SECOND DEGREE. BY M. FAYOUX, NIORT, FRANCE.

The author has always objected to the use of cotton dressings, and has therefore devised a paste which hardens in the presence of water or saliva. It is almost of the same consistence as gutta-percha, and can be removed from a tooth as easily as can fillings made with that material. He uses it especially for the temporary filling of painful caries of the second degree. After an antiseptic irrigation of the cavity, the cement treatment is applied and is allowed to remain *in situ* for several days, that is, until the sensitivity of the dentin has been lessened to the extent of permitting a thorough excavation of the cavity. After removing the cement the dentin appears to be desiccated and hard, and if any pain is experienced it is so slight that the patient stands it very well. He also uses this paste as an antiseptic, as a non-conductor in deep cavities, and also as a temporary filling for the sealing of medicated dressings and arsenical applications, as it not only closes up the cavity thoroughly, but can be removed very easily. This cement is composed of eugenic acid and sublimated zinc oxid.

Eugenic acid, or eugenol, is nothing more than oil of cloves oxidized by exposure to the atmosphere, but oil of cloves cannot be used for the preparation of this paste, in view of the fact that a paste made with this agent does not harden.

[*International Dental Journal*, Philadelphia, November, 1902.]

## CASE OF ARSENICAL NECROSIS. BY JAMES EDWARD POWER, D.M.D., PROVIDENCE, R. I.

Dr. Power reports the case of a man, aged thirty-six years, who, after having felt sick (headache and nausea), noticed a dull pain in the region of the symphysis, extending all along the body of the bone. A physician was called in and diagnosed the disturbance as neuralgia. He recommended a course of treatment which did not improve the condition of the patient. The physician then changed his diagnosis and attributed the pain to the presence of an ulcerated tooth. He therefore extracted a lower central incisor, but this procedure did not benefit the patient. He also extracted a lateral incisor. The patient then consulted another physician, but again failed to obtain any relief. The case then came under the observation of Dr. Power, at his clinic in the St. Joseph Hospital. Upon examination it was found that the mouth was highly inflamed, and that under the chin, in the region of the symphysis, a very tender and painful spot could be found.

The essayist diagnosed the condition as one of necrosis, and advised immediate operation, which he performed under ether, first extracting the remaining teeth,—two bicuspid on the right side and one bicuspid on the left, leaving the last two molars present. Although the region that seemed affected was confined to the area of bone previously occupied by the six anterior teeth, an incision was made along the body of the bone from the third molar on one side to the same tooth on the other, and by the use of spoon-shaped curettes all the dead bone was scraped away; all sharp or jagged edges were cut away with bone-cutters, and a mouth-wash was prescribed.

This case is of unusual interest from the viewpoint of the peculiar cause that brought it about. Necrosis from broken bone, from arsenic used by dentists, from syphilis, from phosphorus, and from tuberculosis having been



eliminated, Dr. Power made inquiries regarding the kind of dentifrice used by his patient, thinking that perhaps the necrosis might be caused by poisonous substances used as ingredients of cheap dentifrices; but the patient replied that he never used anything to clean his teeth except pieces of yarn. He used this about every day to remove particles of food which became lodged between the teeth. Closer investigation showed that he used yarn of all shades, especially green and red. The author then concluded that he had become infected from the arsenic used in dyeing the yarn. He requested him to bring some of the yarn to him. Upon examination, it was found that it did contain arsenic, thus removing all doubt as to the kind of necrosis with which the patient was affected. He is now entirely cured, and is wearing a plate to restore the contour of the face and to give him the advantage of artificial teeth.

[*La Semaine Médicale*, Paris, April, 1902.]

UREMIC STOMATITIS AND ITS DIAGNOSIS. BY DR. E. HERTZ, OF  
THE LAËNNEC HOSPITAL.

The essayist describes the case of a patient, aged fifty-one, who entered the hospital for the treatment of a persistent cephalalgia. He presented respiratory disturbances which were pathognomonic of respiratory uremia. During the examination it was observed that the patient had a very foetid breath, caused doubtless by the diseased condition of the oral cavity. The teeth were covered with thick and viscid deposits and the gums had receded considerably. The gums presented at certain places eroded areas of circular shape covered with a pultaceous substance, which could also be found upon the mucous membrane of the cheek. Grayish plaques could be seen upon the internal surface of the cheeks at the level of the teeth. These were round and festooned, and were sharply outlined upon the mucous membrane. After removing this grayish covering, which had a very repulsive odor, a superficial erosion of the mucous membrane could be seen. These plaques were located on both sides; those upon the left side were close to each other and formed a grayish band, from the upper third molar to the central incisor. In the lower jaw the lesions were located in the neighborhood of the lower molars and formed two plaques separated by a bridge of mucous membrane. Upon the upper lip was seen the termination of the series of plaques which we have just described. Upon the lower lip was found a round plaque. Upon the right side the lesions were not as extensive, the largest ones being found at the level of the upper molars. In the lower jaw and upon the right side, the lesions were not well marked, nevertheless in the neighborhood of the molar teeth a recently eroded surface was found. This was not covered by the muco-membranous layer, and its appearance reminded one very closely of the aphthous patch at the stage of erosion. Nothing abnormal could be found on the tonsils or in the pillars of the fauces. The cheeks externally were normal, and salivation was not very abundant. "To recapitulate, we will say that the patient in question presented respiratory troubles of uremic origin and a stomatitis of an ulcero-membranous aspect."

The author then enters into the discussion of the symptoms and most characteristic features of ulcero-membranous, diphtheritic, and aphthous stomatitis, and says that the stomatitis just described cannot be classified in any of the foregoing varieties. Dr. Hertz diagnosed it as a case of uremic stomatitis, and it must be said that it was not only by a process of exclusion that he arrived at this diagnosis, but also by a comparison of the symptoms presented by his patient with those described by the two authorities on the subject of oral manifestations of uremia, Drs. Lancereaux and Barié. Dr. Barié has described two varieties of uremic stomatitis,—the erythemo-

pultaceous and the ulcerous. The essayist then describes the characteristic features of the two varieties. In the ulcerous variety of uremic stomatitis the absence of ulcerations upon the tongue, tonsils, or pharynx is a pathognomonic sign. The description of this variety agrees very well with the oral disturbances presented by Dr. Hertz's patient, and hence there remains not the slightest doubt regarding the correctness of his diagnosis. He does not refer to the pathological theories that have been advanced with reference to the production of uremic stomatitis, but just mentions the fact that the elimination through the mucous membrane of the mouth of toxins and chemical irritants, of urea in particular, is the most common and accepted theory.

As regards treatment, it is stated that its primary object should consist in the elimination of the poisons from the system, and in the antiseptic treatment of the oral cavity by means of potassium permanganate or hydrogen dioxid. The author concludes his report with the statement that the characteristic lesions of uremic stomatitis make it possible to confirm the diagnosis of certain doubtful cases of uremia, and that it is only in patients that neglect their mouths, or those in a sub-comatose state, that this variety of stomatitis is likely to develop.

[*Dental Review*, Chicago, October 15, 1902.]

#### SOME THOUGHTS ON THE DISCOLORATION AND BLEACHING OF TEETH. BY J. P. BUCKLEY, CHICAGO, ILL.

"As we scan the various text-books and dental journals in search of literature for information upon the subject of bleaching teeth, the conclusion is forced upon us that this subject, important as it is, has been neglected, especially in the recent past." To judge from the foregoing statement the reviewer is warranted in saying that the author is not familiar with a work entitled "*The American Text-book of Operative Dentistry*," in which a full chapter is devoted to the study of the subject of bleaching teeth, from a theoretical as well as from a practical standpoint.

The author considers that the first problem in connection with this subject is to ascertain, if possible, what products are formed by the process of pulp-decomposition that ultimately discolor the tooth-structure; and that until this question is definitely settled, it will not be possible to select with any assurance a chemical agent which will destroy the pigment.

Discussing the process by which the dental tubuli become impregnated with pigmentary matter, it is stated that, simultaneously with the breaking down of the pulp tissue, the inflammatory exudate and blood are decomposed. The hemoglobin, containing iron, is broken up, and this metal is liberated,—only to become united, in all likelihood, with the negative radicals of the acids produced by decomposition of the pulp tissue, forming salts of iron. We do not know to what acids the author refers, as the end products of albuminous decomposition are alkaline in reaction with the exception of carbonic acid gas.

Dr. Buckley fails to mention the products resulting from the decomposition of hemoglobin. In order to show the great importance of this matter, we will quote the following paragraph from the chapter on "*Discolored Teeth and Their Treatment*," in the *American Text-book of Operative Dentistry*: "In passing through its cycle of color changes, hemoglobin undergoes several alterations in composition, during which a number of definite compounds are formed, each having marked chromogenic features. Of these decomposition products, methemoglobin (brownish red), hemin (bluish black), hematin (dark brown or bluish black), and hematoidin (acid), are the most important and best known, while the gradual decomposition of the coloring matter of the blood here noted may, and doubtless does, account for certain phases of tooth-discoloration. Other factors which exert a profoundly modified influence upon the process are yet to be considered."

The author makes two statements which he wishes his readers to carefully consider, and to take them for just what they are worth. First, "I believe the compound of iron which is ultimately produced by the decomposition of the pulp, air excluded, is ferrous hydroxid, a white compound." Second, "I believe the compound of iron which is ultimately produced by the decomposition of the pulp, air admitted, is ferric hydroxid, a reddish brown compound." This compound, the author says, is the so-called pigment with which we have to contend in the bleaching of yellow teeth. Should the tooth have a dark appearance, it perhaps is due to a small amount of the black ferrous sulfid, or a failure of the ferrous hydroxid to become completely oxidized into the ferric form, owing to the lack of moisture or oxygen. These statements, he says, are confirmed by the clinical fact that after a tooth that did not present any discoloration is opened for the removal of a putrescent pulp, a greenish color appears. He believes that the compound formed in the first case is ferrous hydroxid, which is white, and that in contact with the air it is changed into green, then black, and finally into reddish brown ferric hydroxid.

The author states that he is not unmindful of the fact that many teeth can be found containing a putrescent pulp that are very dark and in which no cavity is present. Clinical experience will prove that a tooth containing a recently decomposed pulp is not discolored. There will be no visible change in color until it receives oxygen from the air through a cavity or from the red corpuscles of the blood, which process would take much longer to effect the change.

We do not find any reference to the rôle played by hydrogen sulfid in the discoloration of teeth. It is well known that albumins contain from 0.8 to 2.2 per cent. of sulfur, which in the splitting of the compound during putrefaction yields a large amount of hydrogen sulfid. (Kirk.) This latter compound combines with the iron liberated in the process of hemoglobin decomposition, producing black iron sulfid, which may account for the bluish black discoloration of teeth. The production of iron sulfid during the putrefaction of red blood corpuscles has been confirmed by the investigations of several learned pathologists, and it is more rational from a chemical viewpoint to accept this fact than the theory advanced by the author of this communication. In order that putrefaction should occur the presence of several factors is required, and the argument advanced by Dr. Buckley, that a tooth normal in appearance discolours after it has been opened only shows that the ingress of air and moisture hastens the process of putrefaction, the coloration of the tooth being produced by the chromogenic compounds which result from the decomposition of hemoglobin. He recommends sodium dioxid as the best direct oxidizing agent, and says that in cases where a discolored tooth contains a putrescent pulp it can be treated and bleached at the same time by the careful use of a freshly prepared solution, made by slowly adding sodium dioxid to distilled water. The reaction which occurs, according to Dr. Buckley, is as follows:  $\text{Na}_2\text{O}_2 + \text{H}_2\text{O} = 2\text{NaOH} + \text{H}_2\text{O}_2$ . This reaction, however, does not occur. It is, indeed, absolutely incorrect as a chemical possibility; for, in the compounds the result of the said reaction there are found two atoms of hydrogen more than were present originally. Had the reaction been as stated by Dr. Buckley, it may be asked, Why would it not be better to directly use hydrogen dioxid? When sodium dioxid is dissolved in distilled water under appropriate conditions, the result is a saturated solution of sodium dioxid, and not hydrogen dioxid and water. If, on the other hand, elevation of temperature is not avoided, the loosely combined atom of oxygen in sodium dioxid is liberated and the remaining compound  $\text{Na}_2\text{O}$  combines with water, forming sodium hydroxid (caustic soda).

Regarding the selection of a chemical which will give the best possible result, the author says that if the discoloration be caused by decomposed



pulps, or by amalgam fillings, the direct oxidation method will unquestionably give the best results, but if the tooth has been stained by remedial agents the selection of the chemical to be used must be governed by the agent which produced the stain, for in many of these cases the reducing process gives far better results than the oxidizing method.

He then gives a detailed description of his method of bleaching teeth with sodium dioxid, and concludes his communication with the statement that every precaution should be taken to prevent the sodium dioxid from coming in contact with the soft tissues, as the water in the tissues unites with the chemical, forming caustic soda.

ON THE RELATIONSHIP BETWEEN THE STATE OF THE DENTAL SYSTEM AND THE BUCCAL MANIFESTATIONS IN SYPHILITICS. BY DR. HENRY FROSSARD, ANCIEN EXTERNE DES HÔPITAUX, PARIS, 1901.

In this thesis Dr. Frossard presents observations gathered in the services for venereal diseases of Dr. Thibierge in the Pitié, of Dr. Queyrat at Ricord, and of Dr. Beuermann at the Broca Hospital. After pointing out the dental disorders which may retard the treatment of syphilis, the essayist takes up the study of the buccal manifestations of the disease, their intensity being in relation to the state of the teeth and neighboring structures. With reference to the primary infection it is stated that according to Professor Fournier it may manifest itself in the mouth in several ways, viz, upon the lips, tongue, gums, palate, soft palate, and pillars of the fauces. Cases of chancre upon the gums are very rare, and only 11 cases were observed in a series of 777 buccal chancres. He then studies the secondary and tertiary manifestations of this disease, devoting a few pages to the discussion of mercurial stomatitis, which he states is brought about by the depressing action of mercury upon the mucous membrane and upon phagocytes, also that the presence of diseased teeth and tartar are the predisposing causes which facilitate the infection of the tissues, for, as he says, mercurial stomatitis is a true infection. The purpose of Dr. Frossard's thesis is to emphasize the well-known fact that strict attention to the hygiene of the mouth is a factor of vital importance in the treatment of persons suffering from this disease. He describes the treatment of all the disturbances of the teeth and neighboring structures which may bring about or increase the intensity of syphilitic manifestations in the mouth.

With reference to patients wearing defective prosthetic pieces, he says that cases of syphilitic lesions in the mouth can be traced to the wearing of defective appliances, and that the constant contact of a plate with the palatal mucous membrane the vitality of which is already decreased by the diathesis will in time produce a syphilitic lesion, and that it has been observed that patients that had been wearing plates which they found perfectly comfortable before the disease, could not stand their presence in the mouth shortly after they had become infected.

After devoting several pages to the treatment of syphilitic stomatitis, the essayist describes twenty cases of syphilis with oral manifestations, and brings his interesting thesis to an end with the following conclusions:

(A) *Etiological*: (1) All diseases of the teeth and gums, and in general all causes capable of injuring or affecting the buccal mucous membrane, create points of lessened resistance for the development of syphilitic manifestations. (2) Traumatism of dental origin can be the points of inoculation for the primary lesions. (3) These lesions provoke not only the development of secondary manifestations, but also their recurrence. They retard or completely prevent a cure. (4) They are a predisposing and the most frequent cause of mercurial stomatitis.

(B) *Therapeutic*: (1) Buccal asepsis should be assured from the beginning of syphilis. (2) It is obtained, first, by mechanical means, extracting, polishing of teeth, filling, removal of tartar, and especially of subgingival deposits, and by the judicious selection and construction of prosthetic pieces; second, by therapeutic means, antiseptic irrigations, caustic applications. (3) Buccal asepsis should be preserved during the entire treatment of syphilis by proper hygiene and strict cleanliness.

[*Odontologische Blätter*, Berlin, September 1, 1902.]

# OLD ROMAN INSTRUMENTS FROM THE SAALBURG MUSEUM.

By DR. G. P. GEIST-JACOBI, FRANKFURT, GER.

The author states that Celsus, Pliny, and others showed that at the time of the Roman empire dentistry had reached a relatively high degree of progress, and that therefore it would seem to follow that they must have devised ingenious instruments; but that, unfortunately, the instruments of that epoch that have been found up to date do not portray a high degree of advancement. He states it as probable that some of the instruments used by medical men were also used in connection with dentistry.

Only one Roman extraction forceps has been described up to the present. It is therefore interesting to describe another extraction forceps and a mirror found by Dr. Geist-Jacobi in the Saalburg Museum. This forceps, he thinks, must have been used for the purpose of extracting lower right teeth, and that the mirror was either a mouth-mirror or a laryngoscope. At first, the forceps does not appear as though it were an extracting instrument, as one of the beaks is missing, but if this be reconstructed as shown in an illustration which accompanies his paper, it can readily be seen that it has the characteristics of the modern forceps. He had considered whether it could have been used for another purpose, but in view of the shape of the instrument and the way in which the beaks end, he concluded that it must have been a forceps for dental purposes. He has not been able to ascertain whether the mirror was used as a mouth-mirror or as a laryngoscope. He says that while mouth-mirrors were used in ancient times, they are not mentioned by authors who wrote in the eighteenth century. The mirror itself is concave, a fact which makes it doubtful whether it was really a mouth-mirror; but the author says that he does not see any reason why the Romans could not have recognized the necessity of making magnifying mouth-mirrors. The mirror and the handle are made of one piece.

# A STUDY OF THE TEETH AFTER DEATH FROM A MEDICO-LEGAL STANDPOINT. BY DR. OSCAR AMOËDO, PROFESSOR AT THE ECOLE DENTAIRE OF FRANCE. (Presented at the Section of Odontology of the French Association for the Advancement of Science.)

The changes which the teeth undergo after death have not as yet been the subject of special studies. Their extreme density gives them a durability which is almost indefinite. Nevertheless, the essayist says that under certain conditions the teeth must undergo certain changes of a similar nature to that which bones undergo. Orfila and Lesueur state that the bony system may undergo after burial, and under variable conditions of temperature, humidity, and aeration, any of the following changes:

First: Bones may undergo very slight changes even after several hundred years, as has been shown by the skeleton of King Dagobert, which after twelve hundred years was found in St. Denis almost unchanged. It must be said, however, that it was found inclosed in a casket, which in turn was protected by a stony inclosure. Haller, in his treatise on Physiology, says that the gelatin of bone has been preserved in mummies for two thousand years, and that when exposed to the air, or when in humid surroundings, a few

centuries suffice to bring about their destruction. Under these conditions bones are converted into dust and disappear.

Dr. Amoëdo then studies the conditions which may retard or hasten the disappearance of the skeleton, and calls attention to the fact that human bones that have been buried for about six hundred years have produced twenty-seven per cent. of gelatin and ten per cent. of fatty substances. In some cases they become extremely friable, and break under the slightest pressure.

Second: They may undergo complete saponification.

Third: They may undergo mummification.

The author then describes the observations of Fourcroy and Thouret published in 1789, and says that from the observations of Broca and Manouvrier it appears that a certain number of skulls that were transferred from the Cemetery of the Innocents to the catacombs of Paris, were found to be, after one hundred years, in the same condition as they were before their removal,—this refers to the bones as well as to the teeth. Manouvrier stated that when these skulls were removed from the catacombs they were soft on account of the humidity there present, but that after exposure to the air they became dry in twenty-four hours.

The author again quotes Orfila and Lesueur with reference to the changes which the body undergoes in the presence of water, stating that, as a rule, bodies in that medium have a tendency to become of a rose color. He then takes up the question of the putrefaction of bodies, and says that humid air is extremely favorable to the decomposition of animal matter. Because of their composition, Dr. Amoëdo states that the teeth do not so rapidly become the seat of the several changes above referred to, as the large proportion of inorganic matter which they contain gives them a degree of resistance greater than that of bone. In certain cases the teeth, because of this resistance, become the only possible agents for the identification of human bodies. This is especially so in cases in which bodies undergo carbonization, as was the case in the fire of the Opera Comique of Paris, and more recently in the terrible catastrophe of the Charité Bazaar in 1897. In this last fire many important observations were made regarding the resistance of the teeth to very high temperatures. The essayist then remarks that the soft tissues which enter into the composition of the human organism may completely disappear before the teeth suffer the slightest change, and that if this happens the teeth lose their solidity and become more or less loose according to the way in which they are retained in their alveoli. In the case of young subjects, when the soft tissues have been destroyed, the teeth are likely to come out of their alveoli, as the roots have undergone a process of absorption and therefore cannot retain the teeth in position. Teeth that have a single conical root are also liable to be dislodged after the destruction of the soft tissues. In a word, it is especially in the skulls of young and of old subjects that the teeth are easily dislodged, because of their anatomical arrangement.

The author then enters into a careful and interesting discussion regarding the length of time that teeth may be preserved after death, quoting many important archaeological investigations, asserting that after a considerable number of years the teeth do not present any postmortem modifications, and that their degree of resistance, as well as that of bone, depends on the age and constitution of the individual and on the nature and temperature of the surroundings in which they have been placed. In studying the way in which these conditions may retard or hasten the destruction of the teeth, he says that the character of the disease from which death occurred is one of the conditions having the greatest influence on the destruction of the denture, for, as pathology has shown, there are a number of diseases which, while they do not attack the teeth directly, nevertheless exercise indirect detrimental effects upon these organs. The most rapid disintegration is brought about by the access of air and a sufficient degree of humidity in conjunction with certain organisms. Such diseases as eruptive fevers, the dif-



ferent diatheses, microbic infections, osteomalacia, etc., modify the physical properties and chemical composition of the teeth, from which it follows that the resistance to destructive agents will vary according as to whether the individual died from a general disturbance or from an accident. It is not possible to determine this difference, as this depends as well on the resistance and constitution of the patient.

Beside these external causes, the disintegration of the teeth also depends on atmospheric influences and the depth at which the body has been interred. It is evident that an unprotected body will undergo more rapidly the phenomena of disintegration, and that the skeleton and the teeth will disappear in a very short time. Bodies buried at a slight distance below the surface are more rapidly destroyed than those that are covered by a thick layer of earth. This is because, in the first case, the air and the humidity coming in contact with the body favor the growth of fungi. The conditions most favorable to the preservation of the teeth are those in which the bodies are preserved in vaults and where access of air and chemical agents is not possible. But, while in appearance the teeth are unchanged, microscopical examinations reveal certain changes in their structure. Paltauf states that these are as follows: Putrefaction of the organic substance, loss of continuity, dissolution of the inorganic substances by the fluids of the earth, and growth of very small vegetable organisms within the substance of the tissues. Teeth thus affected become very friable, and when transverse or longitudinal sections are examined it can be seen that the dentin has lost its peculiar aspect and its transparency. Under the microscope the dentin shows the presence of canals which run in the direction of the longitudinal axis of the tooth and after some undulations terminate often in an enlarged end. Their diameter is of several microns, and sometimes they are filled with air, but more often with a striated substance which resembles a ribbon.

The author then discusses the probable causes which bring about these alterations, and refers to the investigations of Galippe, who is of the opinion that they are brought about by the action of micro-organisms. Wedl described these canals in 1864. Roux, who did not have any knowledge of Wedl's discovery, referred to them in 1887, but the priority of this discovery belongs to Wedl.

Dr. Amoëdo then enters into a careful analysis of the investigations of different authors regarding the causes which bring about the destruction of bone structures, and says that notwithstanding the numerous works that have been published on the subject, little as yet is known regarding the ultimate disintegration of the hard tissues of the human body, and especially of the teeth. He refers to the investigations of Dr. Michaels regarding the disintegrating action upon the skeleton of microphytic and thallophytic organisms. Dr. Michaels has carried on his observations on maxillæ and teeth of different prehistoric epochs of the palæolithic, neolithic, bronze, and iron eras, and with the exception of some rare specimens, such as the teeth of *Pithecanthropus* and some others, these specimens are the oldest that have been found up to the present time. The human teeth of these different ages do not differ microscopically from the teeth of to-day as far as size and structure are concerned. They present some characteristics which vary according to the surroundings in which they were preserved.

Dr. Amoëdo then studies carbonization as a cause of rapid deterioration or complete destruction of the teeth, and says that, from observations made upon bodies after the fires of the Ringtheater of Vienna in 1881, of the Opera Comique in Paris in 1887, and of the Charité Bazaar, it was found that the teeth were better preserved than any other part of the body, because of the position and protection afforded them by the surrounding structures. He says that the high temperatures to which bodies are subjected make it exceedingly difficult, and almost impossible, to recognize them, and that the peculiarities of the teeth are a great help in determining the identity of bodies.

Hoffman, who studied the effects of high temperatures upon the teeth in the bodies found after the fire of the Ringtheater, found that a complete calcination of the teeth was coincident with a more or less complete calcination of the skull, and that the teeth presented the shape and appearance of small friable and whitish projections that were readily dislodged from their alveoli if they had not previously fallen out. Very often the teeth had preserved their shape although the head was extensively carbonized. He then quotes in detail the special alterations shown in the teeth under these conditions, and says that sometimes it is difficult to identify bodies by the teeth because they may undergo certain misleading changes when affected by high temperature. For instance, teeth that had black spots upon their surfaces before the accident were white after the fire, this change having been brought about by the effects of calcination.

The author then speaks of the social and humanitarian importance of identifying bodies, and also of the assistance which, in this respect, the dentist may be able to render. The field that has been opened to the dentist in the domain of legal medicine is largely due to the efforts of men who have endeavored to show, as has Dr. Amoëdo, that the teeth may be in many cases the only means for the identification both of living and of dead bodies.

It is believed that this short *résumé* will demonstrate the importance of Dr. Amoëdo's investigations. His extensive paper is full of interesting data upon the microscopical and macroscopical changes which the teeth undergo after death. He has collected the investigations of the very few writers that have occupied themselves with this question, and he is to be highly commended for his careful and conscientious work, which opens a new field for investigation, and makes of the dentist an important additional factor in the solution of problems of a medico-legal nature.

[*La Odontología*, Madrid, July, 1902.]

iodo-SULFUR, OR IODIZED SULFUR. (READ BY DR. CATTON BEFORE THE SOCIÉTÉ D'ODONTOLOGIE, PARIS.)

The antiseptic described by the author is a modification of the old sulfur iodid. The basis of this new compound is a sulfur iodid, carefully prepared by a special process which insures its homogeneous composition. The sulfur iodid thus obtained is again combined with precipitated sulfur in special proportions and at a determined temperature. It contains fifty per cent. of iodine by weight. In the clinics of the hospitals of Paris it has already proved to be a valuable agent because of its rapid healing properties.

Professor Robin reports very favorably upon its use in cases of gaseous fermentations, and as a gastro-intestinal antiseptic iodo-sulfur is superior to benzo-naphthol and to other antiseptic agents. Because of its decomposition in the organism, iodo-sulfur exercises a well-determined action upon general nutrition; in certain periods of tuberculosis, in bronchitis, and in the majority of diseases of the respiratory organs, its action is also very beneficial. Cutaneous affections of the most severe type, and also wounds, are satisfactorily treated with this agent; besides, it offers the special advantage of not producing iodism even when administered in high doses.

As held by Dr. Robin, the important advantages offered by this drug are due to the presence of iodine in the nascent state, and this fact alone places it above all other iodine-carrying agents, in solution or in any other form. In the practice of dentistry, because of its action being more intense than that of iodoform, this agent will prove to be an exceedingly valuable one.

It comes in the form of a yellowish-brown powder having a slight iodine odor which is by no means unpleasant; it is neither caustic nor toxic, as it can be administered internally in doses of one to two grams daily. It is used in all the cases in which iodoform is indicated, and in such cases its action is more rapid, owing to the constant elimination of its iodine constituent.

It presents over iodoform the advantage of exerting its action even at a distance from the seat of the infection, whereas iodoform acts only at that spot; moreover, it undoubtedly brings about favorable changes in the tissues with which it comes in contact, and further, the sulfur constituent of this compound, besides being a good antiseptic, has the property of absorbing gases formed in the process of fermentation. These three important advantages, namely, its action at a distance from the seat of infection, its favorable influence on the tissues with which it comes into contact, and its absorption of the gases by its sulfur element, warrant its use in caries of the fourth degree as a temporary treatment, and in those of the third degree as a cicatrizing agent of the sensitive nervous filaments. Dr. Catton says that at present we do not possess in therapeutics any iodine-bearing compound that can be employed as an ingredient of tooth-powders, because all the agents that might otherwise be used are repulsive because of both their odor and their taste; and as iodo-sulfur does not possess these disadvantages it can be safely recommended for this purpose.

The tooth-powder recommended by the author is as follows:

R—Iodo-sulfur, 60 grains;  
 Saccharin,  $1\frac{1}{2}$  grains;  
 Calcium carbonate, 130 grains;  
 Oil of peppermint,  
 Carmin,                   āā q.s.   M.

Sig.—To be used as a tooth-powder.

Incidentally he calls attention to salol used as an ingredient of tooth-powders, stating that it brings about painful desquamations of the mucous membrane of the lips and gums. The formula here given is inexpensive and can be preserved for a long time.

## PERISCOPE.

**Finishing Rubber Plates.**—A very glossy surface can be given vulcanite work by using a dry and moderately stiff brush wheel charged with talcum powder after having finished with pumice or emery.—F. A. WELD, *Dental Review*.

**Difference Between Direct and Alternating Currents.**—A continuous electric current flows like a stream of water steadily in one direction. An alternating current flows by rising to its full voltage and then falling to its least.—*Power and Transmission*.

**Prevention of X-Ray Burns.**—By the use of a single coat of paraffin, the X-ray burn can be prevented, according to recent demonstrations. The wax is applied either to the skin, or by using a wax-coated paper screen before the light.—*Alkaloid Clinic*.

**Adrenalin Chlorid in Dental Surgery.**—Adrenalin chlorid solution may be used to stop hemorrhage after extraction of teeth or during oral operations. It is also indicated as an application to spongy gums and to control the bleeding which not infrequently occurs in the fitting of crowns.

**Proportion of Children with Defective Teeth.**—A systematic examination of the teeth of school-children at home and abroad,—in the countries of Europe, Canada, and the States of America,—reveals the fact that from ninety-two to ninety-five per cent. have defective teeth.—S. G. YATES, *Journ. Brit. Dental Association*.



**Painless Applications of Mercury Bichlorid Solutions to Mucous Membranes.**—Despierris (*Journal des Praticiens*) states that, while it is known that aqueous solutions of from 1:4000 to 1:10,000 of corrosive sublimate are very painful when applied to the nasal mucous membrane, if these solutions are combined in a proportion of about 2 drams to 1000 parts of sodium chlorid they do not cause the slightest pain when applied to mucous membranes.—*Monthly Cyclopædia*.

**Antidote for Cocain.**—Gelsemium is recommended by an exchange as a useful antidote for cocain poisoning. It has a depressant effect on the nervous system and may be of some worth to allay the nervous excitement of cocain. It has no marked effect upon the heart, but stimulates the respiratory function,—which it destroys in poisonous doses. It has not sufficiently marked influence in counteracting cocain to afford any positive statement as to its effects.—*Dental Register*.

**Erosion of Dentin.**—It appears that the process of erosion of the dentin is much slower than the progress of the same process in enamel. This is probably due to the fact that enamel is more thoroughly mineral matter, and is therefore more readily soluble in the peculiar acid which erodes enamel. Vitality of the pulp, has little to do with this form of solution. In fact, pulp-vitality plays very little part in retarding any form of destructive influence.—W. H. REABEN, *Dental Headlight*.

**Blisters.**—To open a blister upon the foot or hand, pass a needle a few times through a flame to disinfect it, and introduce it in the unaffected skin about an eighth of an inch from the blister. Select the most callous part, as this will make the procedure painless. Push the needle toward the blister and under the raised skin, and then withdraw it. This will form a small channel through which, on slight pressure, the fluid may be evacuated without risk of breaking the blister.—*Journ. of Amer. Med. Association*.

**"Physiological"—Its True Meaning.**—Many men who write, and some men who actually think before writing,—most men do afterward, if ever,—are altogether too prone to use the word "physiological," especially when coupled with the word "condition," as though it were an expression of an actual instead of an ideal state. Were conditions ideal, disease would long ago have been a tradition simply. In fact, physiological only means that the conditions are not incompatible with usefulness.—W. H. BIRCHMORE, *Items of Interest*.

**Counter-irritant Preparation.**—Dr. A. W. Harlan recommends the following iodine paint:

Resublimated iodine,  $\frac{1}{2}$  ounce;  
Potassium iodid,  $\frac{1}{2}$  ounce;  
Flemming's tinct. aconite root,  $\frac{1}{4}$  ounce;  
Alcohol, 1 ounce. M.

To produce perfect counter-irritation dry the gum thoroughly and paint it with three or four coats.

#### **Toothache Drops.**—

Take of—Menthol, 30 grains;  
Camphor, 15 grains;  
Cocain hydrochlorid, from 3 to 7 grains.  
Triturate to the point of liquefaction.

For the relief of odontalgia saturate a pledget of cotton in the liquid, place it in the cavity, and repeat the application every half-hour until the pain subsides.—*Exchange*.

**Save Your Disks and Finishing Strips.**—The sandpaper disks and strips used for finishing gold fillings may be made very profitable if carefully preserved. All such disks and strips should have vaselin on them before using, and this will collect and hold the fine particles of gold, so that when worn out the disks and strips may be saved and sent to a refiner. It is as easy to throw them into a convenient receptacle for this purpose as it is to toss them into the waste-basket or, worse yet, on the operating-room floor, as many operators do. Where much gold filling is done the saving in the course of a year will astonish those who have not tried it.—*Dental Review*.

**Physiological Function of the Pulp.**—It has been conceded by most of the best authorities in dentistry that the embryological, if not the physiological, function of the pulp discontinues with the complete development of the teeth, which is usually about the eighteenth or twentieth year, so that after the maturity of the tooth the pulp is not absolutely necessary for its vitality or stability. Accordingly, nothing is lost, and a great deal is to be gained by destroying it when we have any doubts about its vitality, thus saving ourselves a world of trouble and our patients a deal of suffering at some future date.—F. E. LOGAN, *Dental Headlight*.

**On the Etiology of Noma.**—As the bacteriological examination of the patients of Dr. Korsch (*Bolnit. Gaz. Bot.*, No. 24, 1902) showed the presence, among others, of the diphtheria bacilli, he added to the usual course of treatment an injection of diphtheria antitoxin, after which the ulcerated area began to cover itself with healthy granulations, and the patient's general condition to improve. Though the diphtheria bacillus may be only a secondary factor in the etiology of noma, still the author thinks that it is certainly not an indifferent agent, and consequently, whenever it is found, antitoxin should be added to the rest of the treatment.—*Medical News*.

**How to Avoid the Necessity of Vacuum Chambers.**—If, when we take the impression, we would go carefully over the mouth with the finger, noting all hard places and scraping the impression at every such place just in proportion to its hardness, letting the impression extend well up over the canine eminences, and lightly scraping the model over these eminences but never over the tuberosities, and in mouths with excessively soft places or pendulous gums scraping the model, not the impression, at these soft places, we would have no use for the vacuum chamber, and in almost any mouth we would have a tight-fitting plate.—T. O. GORMAN, *Texas Dental Journal*.

**Resistance of Germs to Light.**—Kirstein (*Zeitschrift für Hygiene*) has shown that in the form of droplets or fine dust, the germs here named are able to survive only for the designated periods under the conditions indicated: Typhoid bacillus, twenty-four hours' exposure to light; diphtheria bacillus, twenty-four to forty-eight hours in light, five days in the dark; tubercle bacillus, five days in the light, twenty-two days in the dark; staphylococcus aureus, eight to ten days in the light, thirty-five days in the dark; streptococcus, ten days in the light, thirty-eight days in the dark; the spores of the charbon bacillus, ten days in the light, at least three months in the dark.—*Modern Medicine*.

**Regarding the Osmosis of Cocain through Dentin.**—Painless excavation has been accomplished in some cases by the use of solutions of cocain in various menstrua. There seems to be a considerable uncertainty about its action, however, which is probably due to the varying condition of

nerve fibrils and tooth-structure in different patients, for while in some cases it works admirably, in others it gives little or no relief. The cocain solution travels through the dentinal tubuli by osmotic action, and in order that this action may take place rapidly it is necessary that the solution be of less density than the fluid in the tubuli, or *vice versa*, as fluids of a like density osmose very slowly.—F. E. CROSBY, *Dental Summary*.

**Advisability of Excluding Carbolic Acid from Arsenical Pastes.**—In devitalizing pulps with arsenic, difficulty is often experienced, the arsenic seeming to have no effect. I do not think it is a good plan to mix carbolic acid into an application, for it coagulates the pulp-tissue and produces an eschar which, while perhaps not sufficient to prevent the action of the arsenic, would certainly retard it.—F. E. CROSBY, *Dental Summary*.

[We have devitalized a number of teeth with a formula recommended by Dr. James Truman, composed of arsenous oxid, iodoform, and carbolic acid, and have never observed anything that would warrant the exclusion of carbolic acid.—ED.]

**Advantages of Hand Pressure.**—Many fillings which otherwise would be good are ruined by plugger points under mallet force piercing the gold and injuring margins or cavities. Not that it is impossible to have such misfortunes resulting from the use of hand-pressure instruments, but the probabilities are greatly diminished. I believe in the use of the mallet in the building up of contour fillings or in any case where the margins are protected, for I think the average operator can make a denser filling with the assistance of the mallet. The precipitated golds are ideal for the use of hand pressure. Another point in favor of hand pressure is that it is not so disagreeable to patients as the different forms of mallet force.—H. C. KAHLO, *Dental Review*.

**Fahrenheit to Centigrade.**—The following simple rule for converting Fahrenheit to centigrade degrees is given by *L'Industrie Electrique*: Subtract 32 degrees and divide by 2; then add to this  $1/10$  of itself, and if further accuracy is desired,  $1/100$  more. For instance, if it is required to find the number of centigrade degrees corresponding to 72 degrees Fahrenheit, subtract 32 and divide by 2, giving 20; adding  $1/10$  more gives 22, and for greater accuracy, another  $1/100$  gives 22.2. The method is not as simple when applied to the reverse calculation, but possesses some interest.—*Scientific American*.

[A simpler method is as follows: Subtract 32, multiply by 5 and divide by 9. For instance:  $72^{\circ} \text{ F} - 32 = 40 \times 5 = 200 \div 9 = 22.2 \text{ C}$ .—ED.]

**Poorly Adjusted Bands.**—One of the principal causes in the production of so many poorly adjusted bands is too much working from impressions, and not enough upon the actual tooth or root in the mouth; and in order to accomplish good results, the dentist must be not only a good mechanic, but an expert operator as well. I think it is a regrettable fact that this system of working from and depending for our fit upon impressions seems to be on the increase, for do we not receive time after time circulars from dental laboratories asking for our patronage? These men cannot be living on nothing,—some dentists must patronize them; and the dentist who takes an impression of a mouth or a partial impression, and has a bridge made from this, is taking long chances on the results.—J. R. MITCHELL, *Dominion Dental Journal*.



**Orthoform.**—Orthoform, which originally was praised on account of its innocuous character, is now described by many writers as unquestionably poisonous. Recently Friedländer, Gumbinner, Ruhemann, Heermann, G. Graul, and Odenthal have reported cases of orthoform intoxications. It is, however, remarkable that the intoxications never proceeded from a lesion of the mucous membrane. Orthoform may therefore be used without hesitation in those cases where it is advisable to treat wounds of the mucous membrane with a local anesthetic. This applies in particular to cancer of the stomach and ulcer ventriculi, where the anesthetic properties of orthoform frequently continue to manifest themselves for many hours or at least until the consumption of the next meal. The requisite dose is 0.5 gm. (gr. vijss) of orthoform in water.—*Merck's Report*.

**Case of Formalin-Poisoning.**—A. Gerlach (*Münch. med. Woch.*, September 9, 1902) was suddenly called to a patient whom he found breathing stertorously and in deep coma. As there was a suspicion of poisoning, the stomach was rapidly washed out, and the odor made it clear that formalin had been swallowed by mistake. On the following day the coma still persisted, and since no urine had been passed, a catheter was inserted, but only three or four drops of a dark fluid could be obtained. Diarrhea soon followed, and consciousness began to return slowly. Respiration, pulse, and temperature now were normal, and the patient began to complain of much vertigo and much burning in the throat. The urine came more freely. It contained traces of albumin and formic acid, but soon became normal after large amounts of water and milk. The local effects upon the digestive tract rapidly subsided.—*Medical News*.

**Solder for Aluminum.**—A great drawback to the use of aluminum for many purposes is the difficulty of soldering it. A number of solders are known that are fairly successful when manipulated by skillful hands. The following one, given in a recent issue of the *Aluminum World*, is presumably of the same class, and is given for what it is worth. It was recommended by Prof. E. Wilson in a paper read before the Society of Arts. The constituents are 28 pounds block-tin, 3.5 pounds phosphor-tin. The phosphor-tin should contain ten per cent. of phosphorus. The following instructions should be followed when soldering aluminum: Clean off all dirt and grease from the surface of the metal with benzine, apply the solder with a copper bit, and when the molten solder covers the surface of the metal, scratch through the solder with a wire brush, by which means the oxid is broken and taken up. Quick manipulation is necessary.—*Power and Transmission*.

**Temperament a Factor in the Selection of Teeth.**—Temperament should play a part in the selection of artificial teeth of the proper size. It is not uncommon to see patients of the bilious temperament with the small or medium teeth indicated in the nervous, or to see patients of the nervous temperament with teeth belonging to those of the bilious or lymphatic types. While temperament should be considered in the size of artificial teeth, it should by no means be overlooked in selecting teeth of the proper shape. Too often do we see patients with angular, expressive faces, square arches and vaults, such as indicate large, angular, slightly bell-crowned teeth, with excessively bell-crowned teeth long and rounded, which are indicated with the V-shaped arch and the high Gothic vault. It is true that we do not meet patients with basal temperaments, but with the combination of two or more temperaments; still, the principal or basal temperament stands out so that there need be no difficulty in determining the temperament when selecting the teeth.—J. Q. BYRAM, *Dental Review*.

**Bad Teeth a Cause of Intemperance.**—It is no flight of the imagination, but a truth to which I believe every man in this room will assent, that bad teeth (and my experience leads me to say that practically all the very poor have bad teeth) lead directly to intemperance in drink. Improperly masticated food produces dyspepsia, which gives rise to pain, uneasiness, and flatulence in the stomach and bowels, hence the craving for the alleviating effect of alcohol, for the comfort and warmth which follows its ingestion; hence our poor man, not himself recognizing why he craves stimulation, will seek it and get it. He will forget his troubles after a few drinks, and no amount of literature and no number of lectures on the evils of the drink habit will still that gnawing in his stomach, nor prevent him from taking comfort in the only way that he knows when the pains of dyspepsia seize him. Because dental caries is so insidious in its onset and so exceedingly common, the general public, and philanthropic people in particular, do not seem to appreciate its extent or the evils to which it gives rise.—R. C. NEWTON, *International Dental Journal*.

**Replacing Facing: Quick Method.**—In the backing from which the facing has been broken, drill pinholes to correspond with pins in facing to be put on. Grind facing to fit. Carbon paper may be used to mark points of contact that need grinding down. With Dr. E. A. Bryant's bridge-repair outfit, which is composed of a countersink, dies for threading pins, and a combined carrier and driver used to adjust the nuts, gold nuts are supplied to exactly fit the enlargement made by the countersink. These instruments are made for the right-angle, in order that any part of the mouth may be reached. Having fitted the facing, countersink the pinholes on the palatal or lingual surface with the instrument made for that purpose. Turn a thread on the pins in the facing, dry off the backing, and mix a little cement as you would for setting a crown. Apply it to the backing, place the facing in position, and with the carrier adjust the nuts to the protruding ends of the threaded pins. Screw up as tightly as they will bear, grind off and polish the ends of the nuts, remove the surplus cement, and the work is completed.—H. E. EATON, *Dominion Dental Journal*.

**Abrasive versus Non-abrasive Substances for Cleaning the Teeth.**—Dr. L. H. Arnold (*Dental Review*) favors a mildly abrasive powder, flavored and sweetened to insure use, for the following reasons:

(1) Some forms of dirt refuse to yield to the brush alone, but do yield readily to the brush and a mildly abrasive powder.

(2) The presence of grit in the mouth is distasteful to most persons, and so will insure a most salutary rinsing, which otherwise, in many cases, would not obtain.

(3) A mildly abrasive powder will maintain the polish on fillings, thus prolonging the life of the latter.

(4) Every particle of acid of any description which comes into contact with the teeth has a dissolving action on the enamel, leaving it soft, rough and in good condition for the sheltering of hosts of acid-producing micro-organisms. This softened portion with its hordes of destructive tenants can be polished off with a mildly abrasive powder but not by non-abrasive substances, its removal making for the preservation of the teeth.

**Syphilitic Infection in the Course of Surgical Operations.**—One of the most distinguished gynecologists of this city, a man who won distinction wherever medicine was practiced, lost his life from an infection which he got during an operation. He died of syphilis. And so might the dentist, who is constantly coming in contact with these papular syphilids. Many a dentist who comes in contact with these conditions is perhaps un-

conscious of the danger of a little syphilitic lesion; even a scratch of the finger (that would seem at the time a simple thing) may afford an ingress to infection and result in the ruining of a constitution. We cannot be too careful in guarding ourselves and patients against the possibility of infection. We must be careful with all our instruments, with our hands, and with everything we have to use in our operating rooms. We must see to it that our instruments are carefully and thoroughly sterilized before using them on another patient. I do not think we dwell upon this subject as much as we should, and I do not think dental students are impressed deeply enough with the importance of antiseptic cleanliness in the performance of operations.—TRUMAN W. BROPHY, *Dental Review*.

**Anesthesia for the Removal of Foreign Bodies from the Trachea and Larynx.**—Crile, in his able researches into the surgery of the respiratory system, advises, wherever possible, local rather than general anesthesia, for several good reasons, a most important one being that when the air-passages are so blocked as to require the action of the extraordinary muscles of respiration, it would be almost fatal to try a general anesthetic which paralyzes these muscles; the burden of supplying air is then thrown upon the ordinary muscles of respiration, which cannot functionate, and so suffocation follows.

Cocain is better than eucain because it produces ischemia and acts more promptly: 0.01 per cent. solution is enough for infiltration. When the respiratory tube is opened, cocain should be applied to the mucosa, by means of a swab or spray, for some distance above and below the opening, to protect the area of possible operative procedures.

It is especially important, if the larynx can be reached from the point of opening, to cocainize its interior; this having been done, sudden collapse and death are quite impossible. This statement may seem rather positive, but is based on experimental and clinical facts. Even if operation be done under general anesthesia, this precaution should be taken, for general anesthesia does not prevent the reflex inhibition.—*Treatment*.

---

## DENTAL SOCIETY ANNOUNCEMENTS.

---

### PENNSYLVANIA BOARD OF DENTAL EXAMINERS.

THE Board of Dental Examiners of Pennsylvania will conduct examinations simultaneously in Philadelphia and Pittsburg, December 16-19, 1902.

For application papers or other information address Hon. James W. Latta, secretary Dental Council, Harrisburg, Pa.

G. W. KLUMP, *Sec'y*.

---

### SOUTH DAKOTA STATE BOARD OF DENTAL EXAMINERS.

THE South Dakota State Board of Dental Examiners will hold its next meeting for the examination of candidates for licenses to practice dentistry in South Dakota, at Mitchell, S. D., on Wednesday, January 7, 1903, beginning at 9 A.M. All parties wishing to come before the board at that time must make application to the secretary on or before December 30, 1902. Candidates are expected to bring operating outfit, filling material, and patient.

G. W. COLLINS, *Sec'y*,  
Vermilion, S. D.



## NEW YORK ODONTOLOGICAL SOCIETY.

THE thirty-sixth anniversary of the New York Odontological Society will be held at the Academy of Medicine, 17 West Forty-third street, New York city, Tuesday, January 20, 1903.

For the afternoon session, beginning at two o'clock, an interesting series of clinics and demonstrations has been arranged.

In the evening, at eight o'clock, Dr. Edward C. Kirk, of Philadelphia, will read a paper entitled "The Structural Characteristics of Calcified Dental Tissues as Related to the Question of So-called 'Hard' and 'Soft' Teeth," bringing out some new matter on this important subject, the discussion of which will be made interesting by the presence of many men of prominence.

W. D. TRACY, *Ch'man Ex. Com.*

## ODONTOGRAPHIC SOCIETY OF CHICAGO.

THE Odontographic Society of Chicago will hold its fifteenth annual meeting February 16 and 17, 1902.

It is the aim to make this a most memorable event in every particular. Papers have been secured from some of the leading men in dentistry, and the subjects selected for discussion are those of the greatest interest to the profession to-day. Two half-days will be devoted to clinics, and every operation of importance will be performed. The exhibitors will be present in full force with all the latest appliances and inventions. Chicago extends a cordial welcome to the profession from every quarter of the globe to attend this meeting.

C. N. JOHNSON, *Pres.*,  
F. H. ZINN, *Sec'y.*

## INSTITUTE OF DENTAL PEDAGOGICS.

THE tenth annual meeting of the Institute of Dental Pedagogics will be held in Chicago December 29, 30, and 31, 1902, at the Palmer House. All who are interested in dental education are cordially invited to attend. The following program has been arranged:

Papers: "Teaching Operative Procedures," C. N. Johnson. "Teaching General Anatomy to Dental Students," Dr. Borland. "Teaching Electricity and its Dental Uses," W. A. Price. "Teaching Embryology," I. N. Broomell. "Teaching Applied Physics," G. V. Black. "Physical Diagnosis."

A symposium on the "Management of the Teaching of Demonstrators in the Infirmary," by four professors.

Report of Committee on "Four-Year Curriculum."

Report of Committee on "Nomenclature."

All new appliances for teaching must be submitted to Dr. Whitslar, of Cleveland, or Dr. Patterson, of Kansas City.

HART J. GOSLEE, *Pres.*,  
W. EARL WILLMOTT, *Ch'man Ex. Board*,  
H. B. TILESTON, *Sec'y and Treas.*

## CONNECTICUT ODONTOLOGICAL SOCIETY.

THERE will be a business meeting of the Connecticut Odontological Society at the Hotel Hartford, Hartford, Conn., on Tuesday, December 9, 1902, at 3 P.M. Dinner at 6 P.M. A cordial invitation is extended to members of the profession.

C. W. HOWGATE, Sec'y,  
Greenwich, Conn.

## A MONTHLY BIBLIOGRAPHY OF DENTAL LITERATURE.

COMPILED BY J. MELVIN LAMB, M.D., D.D.S., WASHINGTON, D. C.

The abbreviations of titles used are those common to bibliographical work, and will, it is presumed, be readily comprehended by any one familiar with dental or scientific publications. Any explanation will be gladly furnished by the compiler. A star (\*) indicates a thesis.

- Adressbuch** der Zahnärzte und Zahn-techniker Deutschlands 1902. Berlin, 1902, 232 pp. 12°.
- Amigues** (M.) \*Etude de quelques symptomes de la paralysie faciale dans leurs rapports avec l'anatomie et la physiologie. Toulouse, 1902, 120 pp. 8°.
- Arsimoles** (L.) \*Des abcès péri-amygdaliens; recherches sur leur siège anatomique. Toulouse, 1902, 2 pl., 164 pp., 1 l. 8°.
- La fossette sus-amygdalienne et les abcès péri-amygdaliens; recherches sur leur siège anatomique. Paris, 1902, A. Maloine, 166 pp., 1 l., 1 pl. 8°.
- Bauchwitz** (M.) Die Behandlung des sensiblen Dentins mit Kohlensäure und deren weitere Verwendung in der Zahnheilkunde. Wiesbaden, 1902, C. Limbarth, 39 pp. 8°.
- Chauveau** (C.) Histoire des maladies du pharynx; préface de du Castel. I. Periode gréco-romaine et byzantine et periode arabe. II et III. Moyen age occidental et temps modernes. 3. v. Paris, 1901-1902, J. B. Baillière & fils. 12°.
- Chevalier** (R. H.) \*Tumeurs linguales solides d'origine thyroïdienne. Travail de la clinique de laryngologie. Lille, 1902, 63 pp. 8°.
- Coraini** (E.) La bocca nell'educazione fisica; comunicazione al primo congresso italiano per l'educazione fisica. Napoli, 1902, F. Giannini & figli, 14 pp. 8°.
- Dunan** (E.) \*Action de la fumée de tabac sur quelques microbes de la bouche. [Paris.] Nîmes, 1901, 94 pp. 8°.
- Farhi** (M.) \*Evolution de la première et de la seconde dentition; leurs accidents respectifs. Montpellier, 1901, 48 pp. 8°.
- Fischer** (B. A.) \*Ueber die Gaumen-grubchen (Foveæ palatinae). Königsberg i Br. 1902, H. Jaeger's Buchdr., 29 pp., 1 l. 8°.
- Fontenelle** (P.) Les dents; manuel pratique d'hygiène dentaire. Paris, 1902, J. B. Baillière & fils, 42 pp., 1 l. 8°.
- Handbuch** der Zahnheilkunde unter Mitwirkung von Albert A. Basty et al., hrsg. von J. Scheff. 5. Lieferung. 2. Auflage. Wien, 1902, A. Holder, 400 pp. 8°.
- Jouvenil** (F. P.) \*Recherches sur quelques détails de structure des glandes salivaires (Croissants de Giannuzzi. Grains de sécrétion). Lille, 1902, 175 pp., 1 l. 8°.
- Kendirdjy** (L.) L'anesthésie chirurgicale par la cocaïne, rachicocainisation et cocaïne localisée. Paris, 1902, G. Steinheil, 142 pp. 8°.
- Lorgnier** (J. C. F. I.) \*Contribution à l'étude clinique des tumeurs bénignes d'origine non glandulaires de la voûte palatine et du voile du palais. Lille, 1901, 130 pp. 8°.
- Luigi** (J.-A.) \*De l'eczéma de la nuque lié à l'évolution de la dent de sept ans. Montpellier, 1901, 60 pp., 2 l. 8°.
- Marshall** (J. S.) A manual of the injuries and surgical diseases of the face, mouth, and jaws. 2. ed. Philadelphia, 1902, S. S. White Dental Mfg. Co., xvi, 715 pp., 4 pl. 8°.
- von Metnitz** (J. R.) Lehrbuch der Zahnheilkunde für praktische Aerzte und Studierende. 3. Aufl. Berlin & Wien, 1903, Urban & Schwarzen, xii, 451 pp. 8°.
- Nelson** (S.) \*Ueber zwei Fälle von Zungentuberculose. Freiburg i B., 1902, H. Epstein, 32 pp. 8°.
- Polscher** (A.) Eine Gabe an die deutschen Zahnkünstler. Oppeln, 1902, G. Maske, 3 pl., 67 pp. 8°.
- Roediger** (K.) \*Weitere Beiträge zur Statistik des Zungencarcinoms. [Heidelberg.] Tübingen, 1901, H. Laupp, jr., 36 pp., 1 l. 8°.

- Rosenthal (M.)** \*De l'hypertrophie de l'amygdale linguale (quatrième amygdale). Lyon, 1902, 78 pp. 8°.
- Adam (J.)** Ethyl chloride as a general anæsthetic. Glasgow M. J., 1902, lviii, 260.—**Adelt (T.)** Der Zahnarzt in Aegypten. Zahnärztl. Rundschau, Berl., 1902, xi, No. 534.—**Adloff (P.)** Zur Kenntniss des Zähnsystems von Hyrax. Ztschr. f. Morphol. u. Anthropol., Stuttgart, 1902, v, 181-200, 2 pl.—**Alagna (G.)** La tonsilla faringea studiata in alcuni mammiferi. Arch. ital. di laringol., Napoli, 1902, xxii, 157-165, 1 pl.—**Alexander (G.) & B. Reko.** Zur Frage der Verwerthbarkeit der Rhodanreaction des Speichels bei Ohrerkrankungen. Wien. klin. Wchnschr., 1902, xv, 1089-1092.—**Allen (H. J.)** A national dental certificate of qualification. Dental Cosmos, Phila., 1902, xlv, 1902, v, 181-200, 2 pl.—**Ames (W. Van B.)** Cements. *Ibid.*: 1023-1028.—**Anderson (Martha.)** Preparation of teeth for microscopic study. Dental Digest, Chicago, 1902, viii, 756-758.—**Arnold (L. H.)** Some phases of oral hygiene. Dental Rev., Chicago, 1902, xvi, 711-717. [Discussion], 751-755.—**Bab.** Zum Capitel der doppelten Füllungen. Wien. Zahnärztl. Monatschr. 1902, iv, 329-335.—**Baccarani Solimei (U.)** L'ematologia della clorancosi. Gazz. d. osp., Milano, 1902, xxiii, 1116.—**Barnes (C. H.)** Nouveaux moyens de prévenir la carie dentaire. Progrès dent., Par., 1902, xxix, 225-233.—**Barnes (H.)** Some facts and conclusions regarding erosion. Dental Summary, Toledo, 1902, xxii, 570-575.—**Batut.** Sur trois cas d'actinomycose de la face. Lyon méd., 1902, xcix, 430-432.—**Beach (J. R.)** Eruption of an inferior third molar externally,—through the face. Dental Headlight, Nashville, Tenn., 1902, xxiii, 150-152.—**Beates (H.) jr.** Should the so-called fundamental branches in the study of dentistry and medicine be taught by the same faculty? Dental Cosmos, Phila., 1902, xlv, 1011-1020.—**Beck (R.)** Paraffin; an ideal material for the filling of root canals. Dental Digest, Chicago, 1902, viii, 758-763.—**Billmeyer (U. D.)** Destruction of pulp; treatment of root canals for the reception of filling. Dental Headlight, Nashville, Tenn., 1902, xxiii, 145-147.—**Black (G. V.)** A restatement of the principles of extension for prevention and some correlated subjects. Brit. J. Dent. Sc., Lond., 1902, xlv, 784-792.—**Bonnalie (G. S.)** The preparation of the mouth for dentures. Dental Rec., Lond., 1902, xxii, 441-448.—**Boyd (F. D.)** Radical cure of tonsillitis. Tr. Texas M. Ass., Austin, 1902, 501-503.—**Broeckaert.** Nouveau mode de résection du trijumeau, en cas de névralgie faciale rebelle. Belgique méd., Gand-Haarlem, 1902, ix, pt. 2, 179.—**Brown (G. V. I.)** General nervous manifestations in relation to the jaws and teeth. Dental Brief, Phila., 1902, vii, 553-561.—**Brown (O. M.)** The systematic influence of mercury in amalgam and red rubber. Dental Rev., Chicago, 1902, xvi, 732-734.—**Bruck (W. W.)** Die Nothwendigkeit der Einführung der Zahnpflege im Heere. J. f. Zahnhl., Berl., 1902, xvii, 111-115.—**Buckley (J. P.)** Some thoughts on the discoloration and bleaching of teeth. Dental Rev., Chicago, 1902, xvi, 791-797.—**Byram (J. Q.)** The selection of artificial teeth for full dentures. *Ibid.*: 806-811.—**Car-penter (G. T.)** Syphilis in dental practice. *Ibid.*: 798-801.—**Cave (W. J.)** A new regulating appliance. Dental Rec., Lond., 1902, xxii, 466.—**Cecil (G.)** The European dentist in India and the prospects awaiting him. Dental Brief, Phila., 1902, vii, 543-549.—**Chappell (H. G.)** Some observations on the dental tubules and their contents. Pacific Dent. Gaz., San Fran., 1902, x, 656-666.—**Charakteristischen (Die)** Veränderungen in der Mundhöhle bei einigen Krankheiten. Zahnkunst, Bresl., 1902, vi, No. 40.—**Cigrand (B. J.)** A knowledge of faciologv essential to dental prosthesis. Dental Review, Chicago, 1902, xvi, 717-726.—**Cipriani (F.)** La bocca dell'uomo nella profilassi della tisi. Corriere san., Milano, 1902, xiii, 580-584.—**Coleman (Alfred.)** [1828-1902.] (Obituary.) Dental Rec., Lond., 1902, xxii, 465.—**Conkey (C. D.)** The tonsils; their anatomy, physiology, pathology, and treatment. Tr. M. Soc., Wisconsin, Madison, 1902, 263-278.—**Contentau (G.)** Les hôpitaux, l'école et dispensaire dentaire de Paris. Rev. stomatol., Par., 1902, ix, 434-436.—**Corley (J. P.)** Points in teaching hygiene. Dental Cosmos, Phila., 1902, xlv, 1035-1039.—**Cottrell (A. J.)** Porcelain inlays. Dental Headlight, Nashville, Tenn., 1902, xxiii, 148-150.—**Cruet (L.)** L'avenir de la stomatologie. Rev. stomatol., Par., 1902, ix, 417-422.—**Curtis (G. L.)** Electric ozonation in neuralgia. Items Interest, N. Y., 1902, xxiv, 750-753.—**Custer (L. E.)** The X-ray as applied to dental practice. Dental Reg., Cincin., 1902, lvi, 433-445.—**Dabney (S. G.)** Enlarged faucial and pharyngeal tonsils; granular pharyngitis. Pediatrics, N. Y., 1902, xiv, 304-307.—**Davenport (S. E.)** Stray thoughts about regulating. Internat. Dent. J., Phila., 1902, xxiii, 736-744.—**Deeréquy.** Névralgie de la branche maxillaire du trijumeau accompagnée d'éruption vésiculaire et consécutive à l'extraction de dents. Rev. stomatol., Par., 1902, ix, 432.—**Delair (L.)** Principes phonétique et d'orthologie leurs rapports avec la prothèse restauratrice vélo-palatine. Odontologie, Par., 1902, 2. s., xv, 184-204.—**Delamere (P. H.)** Ankylostomiasis; is pigmentation of the tongue an early sign? Brit. Guiana M. Ann., Demerara, 1902, 64-67.—**Dietrich.** Triformalpastillen. Zahntech. Rundschau, Berl., 1902, No. 534.—**Dolamore (W. H.)** Two odontomes. J. Brit. Dent. Ass., Lond., 1902, xxiii, 539-550.—**Dreschfeld (H. T.)** Dental diseases and their relation to public health.



- [Abstr.] Brit. J. Dent. Sc., Lond., 1902, xv, 817-820.—**Dunogier** (S.) De l'ostéopériostite phlegmoneuse des mâchoires d'origine dentaire; de sa pathogénie; son traitement. Rev. trimest. suisse d'odont., Basel et Genève, 1902, xii, 198-209.—**Durand**. Calcul salivaire remarquable par son volume et son siège intra-glandulaire. Bull. Soc. de chir. de Lyon, 1901-2, v, 127-129.—**Escher** (O.) Zahnwurzelringe zur Herstellung von Wurzelkappen und Bandkronen für sämtliche Bicuspidaten und Eckzähne, sowie für die oberen Schneidezähne. J. f. Zahnh., Berl., 1902, xvii, 123.—**Faught** (L. A.) Oral hygiene. Dental Cosmos, Phila., 1902, xlv, 1020-1023.—**Ferguson** (A. H.) Contribution to the surgery of cleft palate; a uranostaphylorrhaphy suitable for certain conditions. Ann. Surg., Phila., 1902, xxxvi, 560-562, 2 pl. on 1 l.—**Ferrier** (J.) Toilette de la bouche. Rev. stomatol., Par., 1902, ix, 446-455.—**Frazier** (C. H.) & **W. G. Spiller**. A further report upon the treatment of tic douloureux by division of the sensory root of the Gasserian ganglion. Phila. M. J., 1902, x, 594-597.—**Frazier** (J. M.) Membranous stomatitis, complicating pneumonia; eight cases reported. Tr. Texas M. Ass., Austin, 1902, 527-531.—**Frey** (L.) Rapports pathologiques entre l'articulation temporo-maxillaire et les dents. Odontologie, Par., 1902, 2. s., xv, 321-334, 1 pl.—**Frey** (L.) & **Lemerle** (G.) Les leptothrix de la bouche. *Ibid.*: 251-260.—**Fuijt** (W. J. C.) Ueber die Anwendung von schwachen Induktionsströmen zum Aufspüren einiger Krankheiten der Zahnpulpa. Zahnärztl. Rundschau, Berl., 1902, xi, No. 533.—**Füth**. Ueber eine angeborene Geschwulstbildung perithelärer Natur am Oberkieferzahnfleisch eines 2 Tage alten Mädchens mit Hineinbeziehung des Schmelzkeimes. [Abstr.] Verhandl. d. Gesellsch. f. Geburtsh. zu Leipz. (1901), 1902, 74.—**Gaudier**. Hypertrophie des amygdales palatines. Ann. de m<sup>d</sup>. et chir. inf., Par., 1902, vi, 638-645.—**Gaudry** (A.) Sur la similitude des dents de l'homme et des quelques animaux. Cong. internat. d'anthrop., 1900, Par., 1902, 37-46.—**Geist-Jacobi** (G. P.) Altrömische Instrumente aus der Saalburg. Odont. Bl., Berl., 1902-1903, vii, 219-223.—**Girard** (H.) Le chlorure d'éthyl en anesthésie générale. Rev. de chir., Par., 1902, xxvi, 507-525.—**Gonzalez Castro** (J.) Yuxtaposición permanente de los maxilares; microstoma. Siglo méd., Madrid, 1902, xlix, 152.—**Görke** (M.) Die cystischen Gebilde der hyperplastischen Rachenmandel. Arch. f. Laryngol. u. Rhinol., Berl., 1902, xliii, 224-240.—**Goric** (C.) Tumeur thyroïdienne de la base de la langue; extirpation par les voies naturelles; guérison. Presse oto-laryngol. belge, Brux., 1902, i, 226-229.—**Goslee** (H. J.) The plate and dowel crown. Items Interest, N. Y., 1902, xxiv, 730-738.—**Grégoire**. Sarcome de la base de la langue. Bull. et mém. Soc. anat. de Par., 1902, lxxvii, 366.—**Greve**. Ueber Gaumenobturatoren mit besonderer Berücksichtigung der Indikation. Reichs-Med.-Anz., Leipz., 1902, xxvii, 363-365.—**Hahn**. Verschluckte Prothesen. Zahnärztl. Rundschau, Berl., 1902, xi, No. 533.—**Harcourt** (R. V.) On two methods for the limitation and regulation of chloroform when administered as an anæsthetic. Proc. Roy. Soc. Lond., 1902, lxx, 504-510.—**Harrison** (F.) The principles of bridge-work, etc. J. Brit. Dent. Ass., Lond., 1902, xxiii, 556-558.—**Hartmann** (O.) Die Anwendung des Anästhesins in der chirurgischen Praxis. Therap. d. Gegenw., Berl.-Wien, 1902, n. F., xiv, 475.—**Hartwig** (F.) Eugenol als Antisepticum und Anæstheticum in der Zahnheilkunde. J. f. Zahnh., Berl., 1902, xvii, 115-117.—**Hatch** (R. M.) Some further observations on the use of chloride of ethyl as a general anæsthetic. J. Brit. Dent. Ass., Lond., 1902, xxiii, 551-555.—**Head** (J.) The hygiene of bridge-work as exemplified by a piece of removable porcelain bridge. Dental Cosmos, Phila., 1902, xlv, 1005-1011.—**Hentze**. Die Ursachen des üblen Mundgeruches. Med. Rundschau, Berl., 1902, 1169.—*Also*: Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 530; 531.—**Hinder** (W. S.) The care of teeth in young children. Austral. J. Dent., Melbourne, 1902-3, vi, 21-28.—**Höncz** (K.) Die Beziehungen der Stomatologie zu den übrigen Fachwissenschaften der Medicin. Wien. Zahnärztl. Monatsschr., 1902, iv, 336-344.—**Hoff** (N. S.) A study in bleaching teeth. Dental Reg., Cincin., 1902, lvi, 452-465.—**Hudson** (H.) The relation of environment to dental caries. Dominion Dent. J., Toronto, 1902, xiv, 278-282.—**Inglis** (J. E.) Review of Dr. Smith's paper on "an original system of tightening loose lower incisors," etc. Dental Digest, Chicago, 1902, viii, 726-737.—**Jaboulay**. Grenouillette et calcul salivaire. Bull. Soc. de chir. de Lyon, 1901-2, v, 119.—**Jones** (C. P.) Report of a case of secondary hemorrhage following tonsillotomy; measles. Virginia M. Semi-Month., Richmond, 1902-3, vii, 318.—**Kahlo** (H. C.) Gold as a protection to cavity walls and margins. Dental Rev., Chicago, 1902, xvi, 811-816.—**Kirmisson** (E.) Sur un cas d'absence de la branche montante du maxillaire inférieur du côté droit avec atrophie de la face du même côté, présenté par M. Rudaux. [Rap.] Compt. rend. Soc. d'obst., de gynéc., et de pædiat. de Par., 1902, iv, 153-155.—**Knight** (W.) Modern dentist from a medical standpoint. Dental Digest, Chicago, 1902, viii, 753-756.—**Knowles** (V.) Special impression trays; a further use for the compo. swaging flask. J. Brit. Dent. Ass., Lond., 1902, xxiii, 561-564.—**Körbitz** (A.) Die Befestigung von Porzellanfüllungen. J. f. Zahnh., Berl., 1902, xvii, 119-123.—**Kollbrunner**. Adrenalin. Schweiz. Vrtljschr. f. Zahnh., Basel und Genève, 1902, xii, 196-199.—**Latham** (V. A.) Résumé de la histology of the dental pulp. Internat. Dent. J., Phila., 1902, xxiii, 719-736, 12 pl. on 6 l.—

- Leonard** (Z. L.) The lingual tonsil. South. Clinic, Richmond, 1902, xxv, 289-295.—**Lipscher**. Gestielte Geschwulst der rechten Tonsille. Pest. med.-chir. Presse, Budapest, 1902, xxxviii, 872.—**Lloyd** (R. W.) The field of view of the anæsthetist. West Lond. M. J., Lond., 1902, vii, 249-278.—**Lyons** (A.) Death from the bursting of a tonsillar abscess. Lancet, Lond., 1902, ii, 812.—**Madzsar** (J.) Ueber Pulpitis chronica plastica. Deutsche zahnärztl. Ztg., München, 1902, No. 23.—**Magee** (J. M.) Dental examining boards of politicians? Dominion Dent. J., Toronto, 1902, xiv, 272-277.—**Malherbe** (A.) & **Roubinovitch** (J.) Nouveau procédé d'anesthésie générale par le chlorure d'éthyle. Bull. de laryngol., otol. et rhinol., Par., 1902, v, 189-196.—**Martin** (C.) Sur une simplification apportée au mode de fixation des appareils de prothèse immédiate dans les résections du maxillaire inférieur. Odontologie, Par., 1902, 2. s., xv, 317-320.—**Martuscelli** (G.) Tuberculosis della tonsilla di Luschka. Arch. ital. di laringol., Napoli, 1902, xxii, 166-170.—**Masson** (D.) Pelade et lésions dentaires. Rev. méd. du Canada, Montréal, 1902-3, vi, 229.—**Merriman** (A. F.), jr. Aqueous obtundent: its history, phenomena and possibilities in dentistry. Pacific Dent. Gaz., San Fran., 1902, x, 649-656.—**Miller** (W. D.) Présence des plaques bactériennes sur la surface des dents et leur signification. Rev. stomatol., Par., 1902, ix, 437-443.—**Miron** (G. S.) Gomă sifilitică a faringelui, tertiarism precoce. Spitalul, București, 1902, xxii, 604-606.—**Mitchell** (W.) The artistic treatment of artificial teeth. Dental Rev., Chicago, 1902, xvi, 707-711. [Discussion], 735-751.—**Morestin** (H.) Cancer bucco-pharyngien. Bull. et mém. Soc. anat. de Par., 1902, lxxvii, 387-389.—**von Navratil**. Carcinom der Nase, des Rachens un der Highmorköhle. Pest. med.-chir. Presse, Budapest, 1902, xxxviii, 871.—Epithelcarcinom der Highmorköhle der Nase und des Nasenrachens. *Ibid.*: 942.—**Neumann** (F.) Ueber Paraffininjektionen. Zahnärztl. Rundschau, Berl., 1902, xi, Nos. 529; 533.—**Nieriker** (H.) Erläuterungen über die elastische Inhalationsmaske zur Ausführung von Narkosen. Schweiz. Vrtljschr. f. Zahnh., Basel und Genève, 1902, xii, 192-196.—**Noel** (L. G.) Some of the effects of auto-intoxication upon the teeth and surrounding tissues. Dental Headlight, Nashville, Tenn., 1902, xxiii, 153-158.—**Noyes** (F. B.) Comparative study of the attachment of the teeth. Dental Digest, Chicago, 1902, viii, 749-753.—**O'Neill** (W.) Heredity and nasal stenosis. Brit. M. J., Lond., 1902, ii, 1189.—**Ora** (M.) Di una rara distrofia alveolo-dentaria da sifilide ereditaria. Gior. internaz. d. sc. med., Napoli, 1902, n. s., xxiv, 841.—**Owens** (J. R.) A method of inserting artificial crowns. Items Interest, N. Y., 1902, xxiv, 739-747.—**Packard** (F. R.) The faucial tonsils: the indications for their removal and the best methods by which to accomplish it. Internat. Clin., Phila., 1902, 12 s., iii, 240-246.—**Palinger** (N. L.) General anesthesia induced by the application of a local anesthetic. Dental Cosmos, Phila., 1902, xlv, 1034.—**Pawelz**. Nochmals zur Explosion von Spiritus-Lampen. Zahntech. Rundschau, Berl., 1902, No. 534.—**Peck** (A. H.) Care of children's teeth. Brit. J. Dent. Sc., Lond., 1902, xlv, 874-882.—**Peck** (C. D.) Recreation and exercise for professional people. Dental Summary, Toledo, 1902, xxii, 584-587.—**Pietkiewicz**. Sur une mandibule préhistorique. Bull. et mém. Soc. d'anthrop. de Par., 1902, 5. s., iii, 323-325.—**Plique** (A.-F.) Chloroformisation chez les cardiaques. Rev. trimest. suisse d'odont., Basel und Genève, 1902, xii, 209-211.—**Polya** (J.) Anatomische Untersuchungen über die Wege der Verbreitung des Lippen- und Wangencarcinoms. Ungar. med. Presse, Budapest, 1902, vii, 589.—**Pont**. Note sur un cas de tumeur de la pulpe dentaire sans carie de la dent. Odontologie, Par., 1902, 2. s., xv, 261-263.—De l'utilité de la photographie stéréoscopique en art dentaire. *Ibid.*: 342-358, 1 pl.—**Poor** (F.) Die Dystrophien der Zähne in der Diagnose der hereditären Syphilis. Dermat. Ztschr., Berl., 1902, ix, 616-626.—**Quigg** (H. D.) Death from filling a tooth. Am. M. J., St. Louis, 1902, xxx, 459-461.—**Raoult** (A.) Instruments pour le morcellement et l'évidement des amygdales. Rev. hebdom. de laryngol. [etc.], Par., 1902, xxiii, 278-281.—**Reaben** (W. H.) Dental Chemistry. Dental Headlight, Nashville, Tenn., 1902, xxiii, 158-165.—**Rhein** (M. L.) Porcelain roots. Brit. J. Dent. Sc., Lond., 1902, xlv, 865-873.—**Richardson** (C. W.) Keratosis of the pharynx. Am. J. M. Sc., Phila. and N. Y., 1902, n. s., cxxiv, 614-622.—**Riva Fortunato** (M.) De la antisepsia en las extracciones dentarias. Correo odont. internac., Madrid, 1902, vii, 92-103.—**Robertson** (R.) Notes on a case of enchondroma of submaxillary gland. Tr. South Indian Branch Brit. M. Ass., Madras, 1901-2, ix, 53 1 pl.—**Robin** (P.) Observation sur un nouvel appareil de redressement. Rev. stomatol., Par., 1902, ix, 423-432.—**Rolland & F. Robinson**. Somnoforme. Austral. J. Dent., Melbourne, 1902-3, vi, 29-36.—**Root** (A. G.) A case of sarcoma of the tonsil. Tr. M. Soc. N. Y., Albany, 1902, 341-343.—**Rose** (F.) The pros and cons of fixed bridges; a box crown without removing tooth contours. J. Brit. Dent. Ass., Lond., 1902, xxiii, 558-560.—**Rosenbluth** (E. S.) A legal identification. Dental Cosmos, Phila., 1902, xlv, 1029-1034.—**Roughton** (E. W.) On some morbid conditions of the mouth. Lancet, Lond., 1902, ii, 847; 1029.—**Rudolph**. Ueber Spätwachstum des Unterkiefers. Med. Rundschau, Berl., 1902, 1173.—**Sandvig** (A.) L'aluminium dans la pratique dentaire. Progrès dent., Par., 1902, xxix, 257-267.—**Saunders** (B. E.) Compressed air in dentistry. Dental Summary, Toledo, 1902, xxii, 581-584.—**Scheff** (J.) Ueber die Wirkung



- des Nervocidins auf die Zahnpulpa. Deutsche zahnärztl. Ztg., München, 1902, Nos. 20; 22.—**Schmidt** (D. D. S.) Fall von Stomatitis aphthosa. Zahntechn. Rundschau, Berl., 1902, No. 532.—**Schürch** (O.) Neue Beiträge zur Anthropologie der Schweiz. Schweiz. Vrtljschr. f. Zahnh., Basel und Genève, 1902, xii, 157-191.—**Schulz**. Kaliumchloricum. Deutsche zahnärztl. Wchnschr., Berl., 1902, v, 313-315.—**Sheild** (A. M.) Ulcers of the tongue. Clin. J., Lond., 1902, xx, 353-361.—**Silbermark** (M.) Fremdkörpertuberculose der Zunge in Tumormform. Deutsche Ztschr. f. Chir., Leipzig., 1902, lxiv, 561-569.—**Simpson** (O. H.) Suggestions to crown and bridge workers. Dental Summary, Toledo, 1902, xxii, 561-569.—**Skinner** (F. H.) Care of the teeth at home. Dental Rev., Chicago, 1902, xvi, 802-806.—**Smith** (D. D.) Lose Unterzähne, unterer Zahnersatz und das Abtöden gesunder Zähne. Zahntechn. Reform, 1902, xxi, 193; 201.—**Spence** (S. J.) Experiments in plaster of Paris to test expansions. Items Interest, N. Y., 1902, xxiv, 721-726.—**Spiestersbach** (W.) Ueber Kronen- und Brückenarbeit. Zahntechn. Rundschau, Berl., 1902, Nos. 527; 529.—**Stern** (D.) Essential oils; their application in dentistry. Dental Reg., Cincin., 1902, lvi, 446-452.—**Stiff** (F. W.) Our next forward movement; teaching dental hygiene. Dental Cosmos, Phila., 1902, xlv, 1039-1042.—**Stubblefield** (D. R.) A dead pulp and its consequences. Texas Dent. J., Dallas, 1902, xx, 85-89.—**Swap** (Franklin.) [1830-1902.] (Obituary.) Dental Cosmos, Phila., 1902, xlv, 1080.—**Talbot** (E. S.) Evolution of the pulp. Internat. Dent. J., Phila., 1902, xxiii, 701-718.—**Tarchetti** (C.) & **A. Zancani**. Contributo allo studio della tubercolosi latente delle tonsille e delle vegetazioni adenoidi. Cron. di clin. med. di Genova, 1902, viii, 273-277.—**Taylor** (W. J.) Commercialism vs. professionalism. Pacific Dent. Gaz., San Fran., 1902, x, 577-588.—**Thompson** (A. H.) Ethnographic odontography. Items Interest, N. Y., 1902, xxiv, 754-765.—**Trambusti** (A.) Ricerche batteriologiche in sei nuovi casi di noma. Policlin., Roma, 1902, ix, sez. med., 429-444.—**Trueman** (W. H.) Dental society reports; are they satisfactory? Items Interest, N. Y., 1902, xxiv, 727-729.—**Tucker** (A. V.) Five-rooted third molar. Dental Digest, Chicago, 1902, viii, 725.—**Tumori** della parotide. Ist. di clin. chir. d. r. Univ. di Pisa, Rendic. d. operaz. 1898-1901, 16-22.—**Urso** (C.) Un caso di actinomicosi della mascella inferiore guarito colle iniezioni parenchimatose di ioduro di potassio. Ressegna internaz. d. med. mod., Catania, 1901-2, iii, 349.—**Viscarro**. Sin boca y sin nariz. Siglo méd., Madrid, 1902, xlix, 296.—**Wachtl** (L.) Einiges über die Wirkung der Franzensbader Eisenquellen auf die Zähne. Prag. med. Wchnschr., 1902, xxvii, 477.—**Walker** (W. E.) What can be done in orthodontia and facial orthopedica. Dental Headlight, Nashville, Tenn., 1902, xxiii, 166-171.—**Wallace** (J. S.) The irregularities of the teeth. Dental Rec., Lond., 1902, xxii, 433-440.—Some effects of the refinement of food. Brit. J. Dent. Sc., Lond., 1902, xlv, 769-783.—**Wilcox** (A. A.) Dental cements and the cause of their failure as filling materials. Dominion Dent. J., Toronto, 1902, xiv, 257-272.—**Wimmer** (A.) Ueber Reimplantation von Zähnen. Zahntechn. Rundschau, Berl., 1902, No. 529.—**Woolley** (J. H.) Suggestions in the rational treatment of necrosed bone. Dental Rev., Chicago, 1902, xvi, 726-729. [Discussion], 755-769.—**Wright** (C. M.) Preventive dentistry. Cincin. Lancet-Clinic, 1902, n. s., xlix, 376.—**Zsigmondy** & **Weiser**. Rapport sur l'instruction dentaire en Autriche. Progrès dent., Par., 1902, xxix, 271-273.

## LIST OF UNITED STATES PATENTS

### PERTAINING OR APPLICABLE TO DENTISTRY

ISSUED DURING OCTOBER, 1902.

- Oct. 7.—No. 710,444 to WILLIS H. DWIGHT. Means for attaching tooth-members.  
 " " —No. 710,498 to DOW MCCLAIN. Toothpick.  
 " " —No. 710,638 to JOSEPH E. VAN NOSTRAN. Dental cuspidor.  
 " 14.—No. 711,045 to CHARLES L. GEBAUER. Receptacle for containing and administering volatile liquids.  
 " " —No. 711,052 to HENRY B. KENT. Top for tooth-powder bottles or cans or other containers.  
 " " —No. 711,075 to FREDERICK T. RENCH. Tooth-brush.  
 " " —No. 711,324 to WILLIAM P. LACY. Artificial denture.  
 " " —No. 711,340 to GEORGE J. PAYNTER. Dental mandrel.  
 " 21.—No. 711,827 to JULIUS COOK and JOSEPH M. PUMERVILLE. Electric heater for dental purposes.  
 " 28.—No. 712,057 to NATHAN K. GARHART. Dentist's electric annealing furnace.



# INDEX TO VOLUME XLIV.

- Abbott, A. C., "Practical Manual of Bacteriology," review of, 773.
- Abbott, H. R., presidential address, Ontario Dental Society, 958.
- Abrasive versus non-abrasive substances for cleaning the teeth, 1301.
- Abscesses in deciduous teeth, 1093.
- peridental, treatment of with electricity, 737.
- Absence of temporary teeth, congenital, 200.
- Absorption of teeth in an adult, 85.
- Acute empyema of the maxillary sinus, 996.
- Acute poisoning with cocaine, 892.
- Adenoids, 574, 653.
- a cause of chest deformities, 578.
- and pulmonary tuberculosis, 578.
- interference with brain-work, 578.
- primary tuberculosis of, more common than generally supposed, 781.
- symptoms of, 575.
- treatment of by the dentist, 575.
- Adenoid tumors, atrophy of, 579.
- removal of by Chiari's method, 579.
- Adherent pieces of modeling composition, how to remove from plaster, 85.
- Adhesive plaster or collodion *versus* stitches in mouth-wound, 1210.
- Adrenal extract, 789.
- Adrenalin, a valuable aid in work upon the mucous surfaces, 779.
- for arrest of hemorrhage following tooth-extraction, C. S. McNeille on, 95, 843.
- the most powerful hemostatic ever discovered, 1190.
- Adrenalin chlorid; its use in dental surgery, 1296.
- in pulp-canals, 1243.
- styptic properties of, 111.
- Agents which may set up irritation in gum-borders, 122.
- Alabama Board of Dental Examiners, 396.
- Alcohol, action of, 1090.
- influence of upon natural resistance, 536.
- Alexander, C. L., on cast fillings, 166.
- Allen, H. J., "A National Dental Certificate of Qualification," 1070, 1167.
- All-gold cap crown, advantages of, 267.
- Alumni Association, New York College of Dentistry, 287.
- Alumni Association of Northwestern University, 194.
- Aluminum, solder for, 1300.
- Aluminum splint used in treatment of fracture of lower jaw, 788.
- Alveolar abscess perforating the palate, 885.
- its complication and treatment, 891.
- treatment of by extraction and replantation, 1083.
- with opening upon the outside of the face, caused by death of the pulp in a third molar independent of caries, 562.
- Alveolar process, osseous structure of, 559.
- Alveoli, diseases of, 119.
- Alveolus, pronounced absorption of, remedied by injection of paraffin into gum-tissue, 647.
- Amalgam and cement in combination, value of as filling material, 1247.
- Amalgam inlays, S. G. Perry on, 355.
- Amalgam, building of contour fillings with, 1238.
- introduction of in America, 362.
- Amalgam, preservation of teeth with, 581, 1240.
- to make it adhere to your carrier, 893.
- to restore broken down teeth with, 1239.
- use of in relation to the general health, 962.
- Ambidextrousness, 992.
- American and European dental graduates, differences between, 279.
- American Dental Society of Europe, 662, 796.
- American dentists too apt to sacrifice quality to quantity of work, 1186.
- American Medical Association—Section on Stomatology, 538, 660.
- American Society of Dental Surgeons, resolutions of, concerning the use of amalgam, 363.
- American Society of Orthodontists, 899, 999, 1097.
- Ames, Aaron, obituary of, 982.
- Ames, W. V-B., "Cements," 1023.
- on cavity extension, 153.
- on comparative value of ordinary sealings for root-canal dressing as excluders of bacteria, 1150.
- on separating teeth with gutta-percha, 165.
- Amins, origin and properties of, 1129.
- Analgesics in oral and minor surgery, A. C. Hewett on, 476.
- Anatomical dental nomenclature, international plan for, 115.
- Anatomy, definition of, 1224.
- Anesthesia and analgia, difference between, 476.
- Anesthesia, continued, with nitrous oxid under definite pressure, 16.
- demonstration at the Indianapolis meeting (correspondence), 246.
- for the removal of foreign bodies from the trachea and larynx, 1302.
- lasting, 653.
- safety the first requirement for, 984.
- unsatisfactory, usually the result of imperfect technique on part of the operator, 23.
- with ethyl bromid, 525.
- with nitrous oxid and ether in persons above middle age, 85.
- Anesthetic, importance of familiarity with particular one used, 1209.
- local, A. C. Hewett's formula for, 478, 481.
- topical, formula for, 480, 521.
- Anesthetic mixtures, active strength of should be ascertained by dentists before using, 25.
- points to be considered in employing, 210.
- Anesthetic solutions, sensitivity of tissues to, 212.
- Anesthetics for children, selection of, 537.
- Anesthetists, some suggestions to, 897.
- Angle, Edward, "Orthodontia as a Specialty," 905.
- "The Metal Ligature in Orthodontia," 454.
- Animal alkaloids, J. S. Cassidy on, 1128.
- Animal and vegetable alkaloids essentially similar in their general chemical nature, 1128.
- Annealing gold or copper, 893.
- Anomalous tumor from the antrum, 884.

- Annual Convention of the Sixth, Seventh, and Eighth District Dental Societies of the State of New York, 167, 275, 359, 611.
- Antacids, use of, 1021.
- Anterior teeth, crowns for, 994.
- Antiseptic and germicide, difference between, 335.
- Antiseptic drugs, tooth-stains produced by use of, 102.
- Antiseptic mouth-wash for infants, 1091.
- Antral disturbances, 1092.
- Antral empyema, treatment of, 933.
- Antral trouble not always caused by diseased teeth, 254.
- cases illustrating treatment of, 250, 253.
- Antrum, accidental opening of in extractions, 886.
- illumination of, 250.
- interesting point in treatment of empyema of, J. H. Bradley on, 93.
- inflammatory affections of, F. H. Rule on, 249.
- osseous structure of, 555.
- painless curetting of diseased, 479.
- symptomatology of disturbances of, 783.
- with free drainage of inflammatory product into the nose, 249.
- with retention of inflammatory secretions, 249.
- Apathy in the dental profession, Geo. S. Vann on, 843.
- Appeal to the dental profession: Status of dentists in the navy, 1277.
- Approximal cavities, easy access to through lingual walls, 161.
- in front teeth, gutta-percha filling in, 159.
- Approximal gold fillings, large, of greater longevity than smaller ones, 915.
- Approximo-occlusal cavities in bicuspid and molars, 263.
- Apthous ulcer and mucous syphilitic patch, differentiation between, 530.
- Argentamin in treatment of diseased gums, 8.
- Arkansas Board of Dental Examiners, 541, 1099.
- Arkansas State Dental Society, 539.
- Arkansas state dental law, 640.
- Army dental corps, 543, 1100.
- Arrington, B. F., on tooth and gum preservation, 955.
- Arsenic, why used in preference to cocain, 495.
- Arsenical etiology of pyorrhea, 122.
- Arsenical necrosis, a case of, 1287.
- Arsenical paste, to color, 893.
- Arthur's method of preventing decay, 739.
- Arthur, Dr., on burs and bur shavings, 53.
- Articulation, anatomical, 452.
- Artificial dental substitutes, skill necessary for construction of, 994.
- Artificial dentures, articulation and retention of in edentulous cases, 528.
- Artificial illumination as a science and an art, 280.
- Artificial larynx, an, 203.
- Artificial molars, S. W. Johnson on the functions of, 1044.
- Artificial roots of porcelain, method of placing, 922.
- Ascococcus buccalis, effect of growth in agar cultures, 427.
- Asepsis and antiseptics, surgical, 418.
- R. C. Young on, 686.
- Aseptic methods, danger in extreme, 994.
- Atlanta Dental College, commencement of, 625.
- Atropin indicated as a stimulant to persons suffering from carbolic acid poisoning, 778.
- Attending dental society meetings, importance of, 1210.
- Austin, Harold, and Douglas Gabell, "Notes on Materia Medica and Therapeutics, for Dental Students and Practitioners," review of, 1078.
- Austrian dentists, studies required of, 126.
- Automatic retractors of the tongue, 1211.
- BABBITT metal, to add more copper to, 991.
- Baby ribbon for contouring amalgam fillings, 532.
- Bachman, C. C., "Lower Impressions and Cushion Lower Plates for Special Work," 747.
- Backing teeth in the making of crowns or dummies, 84.
- Bacteria, presence of not a necessary factor in ptomain formation or pus-development, 1128.
- Bacterial films, adherence of to tooth-surface, 438.
- examination for in living subjects, 441.
- invariable presence of in carious processes, 440.
- method of ascertaining the presence of, 438.
- not characteristic of carious teeth, 435.
- presence of in animals' teeth, 437.
- significance of, 425.
- Bacteriology, W. R. Blue on the teaching of, 715.
- Baker, C. R., on treatment of diseased antrum, 253.
- Ballachey, F. A., "Amalgam: The Place It Has Won in Dentistry," 361.
- Baltimore College of Dental Surgery, commencement of, 633.
- Baltimore Medical College, Dental Department, commencement of, 632.
- Band, does not prevent the splitting of root, 895.
- making of for porcelain crown, 109.
- for roots that are badly decayed, 111.
- for the anterior teeth, 149.
- Banded teeth, changes of color in, 70.
- Banding of roots, Dr. John E. Nyman's method, 137.
- Bands, bad results of faulty adaptation of, 141.
- full or partial, cases in which they are indicated, 137.
- poorly adjusted, 1299.
- Barber, Heber B., obituary of, 414.
- Barker, Charles C., obituary of, 80.
- Barnes, Charles H., "The Next Step in the Prevention of Caries," 334.
- Barrett, W. C., "Educational Systems," 1132.
- "Professional Education in America and Europe," 234.
- on dental education, 730.
- on pyorrhea alveolaris, 828.
- on treatment of antral disease, 935.
- "Some Embarrassing Educational Problems," 277.
- Base-plate gutta-percha trial plates, 825.
- Beach, H. E., on removal of impacted third molars, 158.
- on root-amputation, 386.
- on tin for filling temporary teeth, 161.
- Beach, J. R., on instrument sterilization, 719.
- "Report of Committee on Prosthetic Dentistry," N. D. A., So. Br., 1042.
- Beach, J. W., "Treatment of Devitalized Teeth," 1242.
- Beates, H., "Should the So-Called Fundamental Branches in the Study of Dentistry and Medicine be Taught by the Same Faculty?" 1011.
- Beardsley, L. W., on power of specialization, 947.
- Beebe, J. H., on pulp-extirpation, 276.
- Bell, Victor C., "Our Teeth: How to Take Care of Them," review of, 523.
- Bending metal, manipulation in, 418.

- Bennett, A. G., "The Origin of Ideas and Inventions, with Comments on Methods," 819.
- Benzozone a bleaching agent, 103.
- Bicuspid and molars, crowns for, 1057.
- preparation of cavities in, 265.
- Bicuspid crown, an ideal, Richard L. Simpson on, 328.
- Bieder on X rays, 1266.
- Bifid tongue, a case of, 87.
- Biology, definition of, 1223.
- Birmingham (Eng.) Dental Students' Society, 191.
- Bisbee, W. F., "Crown- and Bridge-Work: Baird Method of Making Crowns," 1053.
- Bite, taking of in edentulous jaws, 452.
- Bite plates, 733.
- of vulcanite, 451.
- Black, G. V., "Management of the Infirmary Clinic in Dental Schools," 309.
- on limits to be observed in the cutting away of tooth-structure, 914.
- Bland, Charles A., "Esthetics in Operative Dentistry," 580.
- Bleaching agents, experiments on teeth with, 103.
- Bleaching enamel, 202.
- Bleaching teeth, N. S. Hoff on, 101.
- "Blind abscess," 891.
- Blisters, to open, 1297.
- Blood-stains on instruments and fabrics, to remove, 201.
- Blue light as an anesthetic, 526.
- Blue, W. R., "The Teaching of Bacteriology," 715.
- Boenning, Henry C., "Suppurative Processes involving the Maxilla," 931.
- Bogle, W. R., on introduction of "young blood" into dental societies, 940.
- Bogue, E. A., on tooth-decay, 515.
- Bone, decalcified, preparation of, 584.
- histology of, 550.
- in pyorrheal troubles, condition of surrounding, 932.
- Bone-chips, decalcified, use of to prevent loss of osseous substance, 582.
- Bone lamellæ, varieties of, 551.
- Books alone but a minor factor in the development of manual skill, 993.
- Bonwill clasp, disadvantages of, 1160.
- Bonwill, W. G., on pyorrhea alveolaris, 828.
- Borax solution for soldering, 86.
- Boric acid poisoning, two cases of, 417.
- Bowles, S. W., on platinum matrix for porcelain inlay work, 1178.
- Brady, W. J., on the mechanism concerned in the operation of occlusion, 945.
- Breslau Dental Institute, 532.
- Brewer, A. C., on porcelain inlays, 382.
- Bridge anchorage without band or crown, 651.
- Bridge for replacement of a single molar or bicuspid, 1010.
- Bridge-work, abutments for, 333.
- A. C. Hart's method of making, 1161.
- extent of should depend on condition of supports and surrounding tissues, 65.
- fitting of porcelain facings in, 1056.
- repairing of, 622.
- Bridge-work, removable, W. E. Griswold on, 611.
- Joseph Head on, 1005.
- advantages of, 1006.
- some considerations in modern, N. S. Hoff on, 65.
- Broaches, Swiss, method of drawing temper from, 84.
- Broaches, use of in posterior teeth, 653.
- Broomell, I. Norman, "Anatomy and Histology of the Mouth and Teeth," review of, 1200.
- Brophy, T. W., on cleft-palate, 601.
- on porcelain inlays, 597.
- Brophy, T. W., president's address, International Commission of Education, 1221.
- Brown, A. J., on Brophy operation for cleft-palate, 973.
- Brown, G. V. I., on asepsis, 718.
- on dental education, 724.
- on the use of the matrix in introducing fillings, 1143, 1145.
- Brushing the tongue, 894.
- Bryant, E. A., on the status of the dental profession, 489.
- Buccal and large approximal cavities in bicuspids and molars, ideal method of filling, 88.
- Buchanan, Rice R., obituary of, 881.
- Burkhardt, Dr., on the dentist's duty to his patient, 618.
- Burchard, H. H., on discoloration of amalgam fillings, 983.
- Burns, treatment for, 533, 654.
- Burs, how to clean, 201.
- Button of gold to retain clasps in position on cone-shaped teeth, 1160.
- CALCIFICATION, the "borderland" of, 918.
- Calcium and magnesium oxychlorid, mixture of used as a plastic filling, 989.
- Calcium chlorid, use of to prevent hemorrhage after tooth-extraction, 986.
- Calcium peroxid as a disinfectant for carious teeth, 533.
- Caldwell, Geo. W., obituary of, 299.
- California State Dental Association, annual meeting and election of officers, 1072.
- Callahan, Andrew M., obituary of, 1079.
- Caloric heat, definition of, 504.
- Canadian Dental Association, 797, 898, 1277.
- Canal reamers, indications for the use of, 1243.
- Cancrum oris in an asylum, 534.
- "Candle power," a, defined, 991.
- Canine, difficulty of banding, 148.
- retarded eruption of, 83.
- Canines, broken-down, W. A. Price's method of restoring, 68.
- Canine crowns, how to shape porcelain in backing, 67.
- Canine fossa, granular matrix of, 553.
- osseous structure of, 551.
- Capon, F. G., "Porcelain as an Art in Crown-Work," 106.
- on root-preparation, 147.
- Capon, W. A., on general considerations in porcelain work, 1176.
- "Preparation of Cavities for Porcelain," 377, 384.
- on method of making a bicuspid porcelain crown, 1179.
- Carbolic acid should be excluded from arsenical pastes, 1299.
- Carbolic acid gangrene, a severe case of, 997.
- Carbolic acid poisoning, treatment of, 773.
- Carbuncle, painless lancing of, 479.
- treatment of, 656.
- Caries, beginning of, 444.
- bottom of sulci in, 190.
- electro-chemical theory of, 191.
- etiology of, E. C. Kirk, 514.
- immunity to, in areas that are kept clean, 184.
- increase of, 338.
- lack of cleanliness one of the great causes of, 1020.
- pathology of, G. V. Black on, 883.
- prevention of, Charles H. Barnes on, 331.
- saliva as a factor in the production of, 184.
- three things essential for prevention of, 502.
- without bacterial film, 437.
- Caroid solvent as an agent in root-canal treatment, 913.
- Carter, H. W., on nitrous oxid and ether anesthesia, 215.



- Cassidy, J. S., "Animal Alkaloids," 1128.  
 Castor oil, administration of for neuralgia, 416.  
 Cast fillings, C. L. Alexander on, 166.  
 Casualty during tooth-extraction, 985.  
 Cataphoresis, technique for successfully applying, 1084.  
 Cavities in bicuspid and molars, filling buccal and large approximal, 88.  
 in front teeth, necessity of filling from lingual surface, 596.  
 in molars and bicuspid and molars, preparation of for gold inlays, 815.  
 necessity of histological knowledge for preparing, 155.  
 preparation of for inlays, 377.  
 simple approximal, how to fill, 262.  
 to obtain good access to, 265.  
 with approximo-incisal angle gone, 263.  
 Cavity margins, preparation of with chisel, 470.  
 extension of, 471.  
 Cavity preparation, 158, 262, 893.  
 W. P. Galbway on, 264.  
 E. K. Wedelstaedt on, 468.  
 Cellulitis due to alveolar abscess, treatment of, 656.  
 Cement and gold combinations, priority in adoption of, 822.  
 Cement fillings, a point about, 897.  
 Cement treatment of painful caries of the second degree, 1287.  
 Cements, W. V-B. Ames on, 1023.  
 S. G. Perry on, 607.  
 action of acids and alkalies on, 1059.  
 causes of failure of, 1059.  
 essential qualities they should possess, 1058.  
 fineness or coarseness of powder a factor in the setting of, 1026.  
 how to mix them, 1060.  
 in the construction of seamless crowns, 992.  
 manner of preserving, 1060.  
 modified by alkaline and non-alkaline phosphates, 1025.  
 oxids which in combination with phosphoric acid will make, 1026.  
 use of under gold fillings, 1247.  
 Cementation, 32.  
 Central Dental Association of Northern New Jersey, 288.  
 Cervical margins, best material for filling of, 152, 1144.  
 preservation of with non-cohesive gold, 570.  
 Chapple, J. A., on non-cohesive *versus* cohesive gold for cervical margins, 1144.  
 Charcoal application in hemorrhage, 526.  
 Charge, a, of plagiarism, 125, 340.  
 Chemical light in dentistry, 986.  
 Chemistry, definition of, 1224.  
 of Tooth-bleaching (editorial), 196.  
 Chewing-gum a factor in tooth-cleaning, 1037.  
 Chiaie teeth, 300.  
 Chicago College of Dental Surgery, commencement of, 634.  
 Children require deeper anesthetization than adults, 20.  
 should not be subjected to lengthy sittings, 1185.  
 with defective teeth, proportion of, 1296.  
 Children's teeth are never too soft for gold, 1186.  
 failure of gold fillings usually fault of operator, not of material, 1185.  
 plan to promote care of, 959.  
 some reasons why neglected, 959.  
 Chinese Mode of Extracting Teeth (editorial), 198.  
 Chiwaki, M., "Recent Progress and Present Condition of Dentistry in Japan," 805.  
 Chloral hydrate as a vesicant, 1209.  
 Chloroform anesthesia, 647.  
 and ether anesthesia, 1213.  
 Chloroform, Dr. A. C. Hewett's method of administering, 257, 483.  
 accidents during use of, 1212.  
 dangers accompanying it, 483, 996.  
 indications for the use of, 896.  
 to prevent vomiting in, 789.  
 Chloroformization of patients suffering from cardiac disorders, 657.  
 Chloro-percha as a root-canal filling, 1244.  
 and gutta-percha better than pure gutta-percha for cones for root-canal fillings, 1152.  
 Chronic abscesses, 496.  
 Chronic oral sepsis, diagnosis and treatment of, 7, 8.  
 Cincinnati College of Oral Surgery, commencement of, 628.  
 Clapp, D. W., on X rays in dentistry, 1271.  
 Classroom methods of teaching, L. S. Tenney on, 705.  
 Claude, G. H., on porcelain restoration, 383.  
 Cleaning teeth, skill required in, 996.  
 Cleansable spaces *versus* saddles swaged to fit soft tissues, 1064.  
 Cleansing of the teeth and gums, 1006.  
 Cleft palate, Carl B. Miller on, 571.  
 impression of mouth with, 572.  
 Clinical experience frequently at variance with laboratory work, 1148.  
 Clinics at National Dental Association, Southern Branch, 391.  
 at union meeting of Maryland State Dental Association and District of Columbia Dental Society, 1177.  
 Clouding of mouth-mirrors, to prevent, 655.  
 Cocain and eucain, comparative value of, 531.  
 Cocain hydrochlorid, superiority of in local anesthesia, 481.  
 Cocain, antidote for, 1297.  
 cataphoresis with, first method of, 275.  
 discovery of analgesic properties of, 210.  
 failure with, due to insufficient pulp-exposure, 277.  
 formula for hypodermic use of, 480.  
 in pulp-extirpation, B. S. Hert on, 275.  
 mediums for dissolving, 276.  
 nature of toxic action of, 84.  
 poisoning with, coffee as an antidote for, 81.  
 proper dose of, 25.  
 solution of, forced into pulp under pressure, 275.  
 susceptibility to, 24.  
 the cause of edema, 604.  
 toxic dose varies according to constitution of individual, 892.  
 Cohesive and non-cohesive gold, difference in density of fillings made with, 1049.  
 Cohesive gold, F. Holland on, 152.  
 and non-cohesive, W. V-B. Ames on, 153.  
 failure of at cervical margin, 569.  
 precautions to be observed in manipulating, 993.  
 Coles, Oakley, on pulp-digestion, 852.  
 College of Dentistry of the University of Minnesota, commencement of, 875.  
 College of Physicians and Surgeons, Dental Department, commencement of, 876.  
 Collier, Mayo, on mouth-breathing and distorted arches, 951.  
 Colorado State Dental Association, 663.  
 Color effects, by staining, in artificial teeth, 419.  
 Colorado College of Dental Surgeons, commencement of, 763.  
 Colorado State Board of Dental Examiners, 542, 1214.  
 Colorado State Dental Association, 663

- Columbia University, Dental Department, commencement of, 762.
- Colyer, J. F., and Morton Smale, "Diseases and Injuries of the Teeth, including Pathology and Treatment," review of, 774.
- Combination fillings of cohesive and non-cohesive gold, W. E. Walker on, 154.
- Coming dental meetings, 537, 659, 898.
- Commission of Education of I. D. F., duties of, 1142.
- Committee on Necrology of National Dental Association, Southern Branch, report of, 393.
- Committee of Oral Hygiene in Our Public Schools (N. D. A.), 1041.
- Comparative anatomy and physiology, importance of for dentists, 319.
- Comparative dental anatomy, histology, and bacteriology, I. N. Broomell on, 1169.
- Comparative occlusion and its bearings upon orthodontia, A. H. Thompson on, 9.
- Comparative value of ordinary sealings for root-canal dressing as excluders of bacteria, W. V-B. Ames on, 1150.
- Compound fracture of both jaws, 89.
- Condensation of gold, 994.
- Connecticut, Dental Commissioners of, 397.
- Connecticut Odontological Society, 664, 1304.
- Connecticut State Dental Association, meeting of, 291.
- Conservative treatment in orthodontia, H. A. Pullen on, 225.
- Constitutionality of the Pennsylvania Dental Law (editorial), 292.
- Contour, advantages of over separation, 821.
- Contouring, Dr. Marshall H. Webb on "extension for prevention" in, 914.
- Cooke, A. R., "Report of Committee on Practice," (New York State Dental Society), 832.
- Coon, W. W., "Further Antrum-La Grippe Considerations," 736.
- Conzette, J. V., on diseased antrum, 255.
- Copper oxyphosphate cement, 1027.
- Coppering brass, method of, 86.
- Corley, J. P., "Inflammatory Phenomena, Due to an Unerrupted Third Molar," 156.
- "Oral Hygiene," 386, 389.
- "Points in Teaching Hygiene," 1035.
- Correction, a, 75, 521, 832.
- Cosmolon not a suitable material for canal-stopping, 1149.
- Council of Dental Surgeons of New Brunswick, 1073.
- Counter dies, to prevent from sticking, 81.
- Counter-irritant preparation, 1297.
- "Crawford Crowns," 390.
- Crawford, J. Y., "Report of Committee on Life Insurance," N. D. A., So. Br., 949.
- on manipulation of cohesive and non-cohesive gold, 154.
- on porcelain inlays, 597.
- on specialists in dentistry, 948.
- on teeth-regulation, 962.
- Creasote, coagulating properties of, 856, 861.
- Crenshaw, Wm., "Cavity Management in Connection with the Contour Matrix," 681.
- "The Contour Matrix," 830.
- "Non-Cohesive *versus* Cohesive Gold for Cervical Margins," 569, 1146.
- on the use of the "contour matrix," 1146, 1178.
- Crenshaw's matrix, advantages derived from, 686.
- description of, 683.
- Creolin, 83.
- Croll, H. A., on care of children's teeth, 959.
- Crossland, J. H., on the interdental spaces, 165.
- Crown- and bridge-work, origin of, 1053.
- W. F. Bisbee on, 1053.
- Crown, porcelain-faced, 598.
- H. H. Johnson's method of obtaining articulation for, 598.
- Crowned roots, direction of fractures of, 138, 146.
- Crowning of badly decayed roots, 111.
- destruction of roots from, 995.
- of teeth having living pulps, 895.
- preparation of roots for, 136.
- Crowns, artificial, requirements of, 107.
- embracing only part of natural crown, 148.
- for the anterior teeth, 994.
- for use in very short bites, 138.
- gold, for bicuspid and molars, 1057.
- lengthening of, 1056.
- making of according to Baird's method, 1053.
- painless insertion of, 895.
- seamless, 1057.
- semi-band, 108.
- without bands, 777.
- Cruzen, E. E., on method of replacing broken crown without removing pin, 1178.
- on porcelain inlays, 383.
- "Cup-crowns," preparation of roots for, 112.
- Curious symptoms following tooth-extraction, 89.
- Current literature on orthodontia, partial review of, W. E. Walker on, 950.
- Currie, Herbert D., obituary of, 1202.
- Curtis, G. L., "Electric Ozonation in the Treatment of Neuralgia," 1183.
- Custer, Levitt E., "Restoration of the Incisive Edges of the Anterior Teeth with Porcelain," 1137.
- Cuttlefish for impressions of teeth in crown- and bridge-work, 1057.
- DAVENPORT, A. F., "Interstate Examinations," 246.
- Dead teeth in the mouth, evils resulting from, 995.
- Death, numerous cases of, due to bacteria gaining access through buccal cavity, 502.
- Decalcified dentin, leaving of in cavities, 473.
- Decay, absence of under healthy gum, 189.
- recurring at the margins of the gums or around fillings, 83.
- Decayed cabbage, odor of, typical of chronic pyorrhea, 5.
- Deciduous teeth, filling-materials for, 1092.
- retention of, 286.
- Demulcents, action of, 1211.
- Dental and medical colleges, separation of, 278.
- Dental and race degeneracy connected, 891.
- Dental arch in orthodontia, curve or shape of should conform to temperament of patient, 788.
- "Dental caries, at what stage in the process of should we begin to operate?" 416.
- "Dental cements and the cause of their failure as filling materials," A. A. Wilcox on, 1058.
- Dental clinics, method of record of operations performed in, 311, 313.
- Dental college, extended course and broadened curriculum of, 236.
- the first founded in 1839, 235.
- Dental College, Ohio Medical University, commencement of, 630.
- Dental Commissioners of Connecticut, 1215.
- DENTAL COSMOS report (Remarks on) of Third International Dental Congress, Paris, 1900, 416.

- Dental diploma, value of in foreign countries, 1165.
- Dental disease, heredity in relation to, 961.
- peculiar, in soldiers returned from the Philippines, 1072.
- Dental disorders caused by the grippe, 737.
- caused by tonsillitis, 738.
- Dental education, Ch. Godon on, 131.
- American, compared with European, 238.
- among the people, 268.
- in various countries, 240, 243.
- report of committee on (N. D. A., So. Br.), 720.
- Dental erosion, 889, 929, 1207.
- Dental exposition, in Munich, Bavaria, 400.
- Dental fee, insufficiency of, 272.
- Dental hygiene, F. W. Stiff on the teaching of, 1039.
- in Virginia, 1041.
- origin of, 1210.
- Dental institutions, high-grade, curriculum of, 1224.
- Dental instruction, extent and exigencies of, 887.
- Dental jurisprudence, E. S. Rosenbluth on, 1029.
- Dental law of Arkansas, 640.
- Dental laws, great difference in those of different states, 1164.
- in British colonies, 1096.
- Dental medicine, A. W. Harlan on the basis of, 853.
- Dental nomenclature, 658.
- use of uniform, 310.
- Dental operations, priority in, 86.
- Dental profession, the status of, 485.
- Dental prophylaxis, 790.
- Dental schools, establishment of first in Japan, 809.
- Dental Society of the State of New York, 72, 753, 832, 1147.
- its past and future, 284.
- report of its Committee on Practice, 832.
- report of its Correspondent on a "Plan for the Furtherance of Scientific Research," 753.
- Dental specialists, 997.
- Dental student, legal status of, 310.
- should be familiar with physical diagnosis, 984.
- Dental surgeons in the army and navy, Wms. Donnally on condition of, 941.
- resolutions on, passed by N. D. A., So. Br., 941.
- Dental system and the buccal manifestations in syphilitics, relationship between, 1291.
- Dental work, high standard of, fifty years ago, 269.
- seldom rated at its true worth, 268.
- Dental writings, modern, tendency to omit bibliographical references in, 991.
- Dentist, active field of, in proportion to his knowledge, 889.
- and medical practitioner, consultation between frequently necessary, 124.
- Garretson's view on sphere of the, 485.
- his duty to his patient, L. P. Sanford on, 616.
- necessity of mechanical skill for, 491.
- of to-day, duty of to keep patient's mouth free from sepsis, 919.
- preliminary education for, 490.
- Dentistry and the Carnegie Fund (editorial), 768.
- appreciation of in America, 654.
- caution should be exercised in extending professional fellowship in, 1132.
- difference in American and European instruction in, 1136.
- early established in America as a distinct profession, results of, 1134.
- fundamental studies of should be taught by dental faculties, 1099.
- in Japan, cause of development of, 807.
- Dentistry, need of international standard of curriculum of study for, 1132.
- origin of, 805.
- past and present, C. N. Peirce on, 316.
- plan of Chapin A. Harris to make it a medical specialty, 1133.
- recent progress and present condition of, 805.
- scope of, 1224.
- study of fundamental branches of, 1011.
- the future of, Stewart J. Spence on, 332.
- Dentists, some things they know little about, M. A. Morrison on, 961.
- in Japan, 810.
- in the navy, the status of, 1277.
- Dentures, artificial, R. Ottolengui on, 446.
- Japanese, of ivory, metal, and boxwood, 807.
- Detroit College of Medicine, Dental Department, commencement of, 763.
- Development of Dental Literature (editorial), 636.
- Devitalizing paste, 200.
- Devitalizing teeth, 991.
- Diagnosing caries, 535.
- Diagnosis, errors in, James E. Powers on, 1248.
- importance of in treating orthodontia, 226.
- in dental practice, 787.
- Dieffenderfer, W. E., on a national dental certificate of qualification, 1164.
- Difference between direct and alternating currents, 1296.
- Dionin, antiseptic value of, 1092, 1212.
- Discussion on "An Alveolar Abscess with Opening upon the Outside of the Face Caused by Death of Pulp in a Third Molar, Independent of Caries," 603.
- on "A National Dental Certificate of Qualification," 1163.
- on "An Improvement in Interdental Splints," 1068.
- on "A New Hemostatic," 1190.
- on "Apathy in the Dental Profession," 938.
- on "A Plan for the Furtherance of Scientific Research," etc., 758.
- on "Artificial Dentures with Special Reference to Plaster Impressions," 733.
- on "An Artificial Molar and Its Functions," 1045.
- on "Asepsis," 717.
- on "A Study in Bleaching Teeth," 740.
- on "Burs and Bur Shavings," 53.
- on "Care of Children's Teeth," 959.
- on "Cavity Preparation," 465.
- on clinics of N. D. A., So. Br., 392.
- on "Cocain in Pulp-Extirpation," 276.
- on "Comparative Dental Anatomy, Histology, and Bacteriology," 1168.
- on "Conservative Treatment in Orthodontia," 285.
- on "Dental Cements and the Cause of Their Failure as Filling Materials," 1060.
- on "Electric Ozonation in the Treatment of Neuralgia," 1183.
- on "Esthetics in Operative Dentistry," 594.
- on "Ethical Relation of Dentist to Patient," 613.
- on "Ethics," 744.
- on "Extension for Prevention," 1152.
- on "Fast and Slow Separation: Lesions Incident Thereto When Overdone," 741.
- on "Further Antrum - La Grippe Considerations," 737.
- on "Hammer and Nails," 871.
- on "Indications for Extracting 'Sixth-Year' Molars," 965.
- on "Inflammatory Affections of the Antrum of Highmore," 253.
- on "Inflammatory Phenomena Due to an Unerrupted Third Molar," 157.



- Discussion on "Nitrous Oxid and Oxygen Anesthesia," 280.  
 on "Non-Cohesive *versus* Cohesive Gold for Cervical Margins," 1143.  
 on "Oral Hygiene," 388, 1180.  
 on "Points in Teaching Hygiene," 1038.  
 on "Porcelain as an Art in Crown-Work," 135.  
 on "Porcelain Work—General Considerations," 1176.  
 on "Practical Cases of Diseased Antrum," 253.  
 on "Preparation of Cavities for Porcelain," 381.  
 on "President's Address" (N. J. Dental Society), 1182.  
 on "Professional Education," 729.  
 on "Pyorrhea Alveolaris," 349, 360.  
 on "Report of Committee on Orthodontia," N. D. A., So. Br., 947.  
 on "Report of Committee on Practice," Dental Society of the State of New York," 835.  
 on "Root-Fillings and Their Relative Values," 1162.  
 on "Science as a Teacher of Prophylaxis," 510.  
 on "Should Children's Teeth be Filled With Gold?" 1186.  
 on "Some Considerations in Modern Bridge-Work," 65.  
 on "Some Methods Used in Gold Fillings," 152.  
 on "Some Peculiar Cases of Extraction," 374.  
 on "Some Questions and Some Suggestions," 496.  
 on "Some Thoughts on the Packing of Gold," 45.  
 on "Statistical Study of Local Anesthesia in Dentistry," 50.  
 on "Status of the Dental Profession," 489.  
 on "Suppurative Processes Involving the Maxilla," 935.  
 on "Surface Markings upon the Teeth," 370.  
 on "Surgical Treatment of Palatal Defects," 601.  
 on "The Basis of Dental Medicine," 858.  
 on "The Brophy Operation for Cleft Palate," 973.  
 on "The Comparative Value of Ordinary Sealings for Root-Canal Dressing as Excluders of Bacteria," 1147.  
 on "The Dentist's Duty to His Patient," 617.  
 on "The Enamel of the Central Incisors," 187.  
 on "The Hygiene of Bridge-Work as Exemplified by a Piece of Removable Porcelain Bridge," 1157.  
 on "The Management of the Superior Incisors and Bicuspid," 161.  
 on "Vulcanite Rubber, Its Use and Abuse," 261.  
 on "What Chemical Influence Has Saliva on Cement?" 606.  
 Disease, how produced by germs, 856.  
 simulating phosphor-necrosis among workers in gutta-percha, 86.  
 Diseased antrum, practical cases of, 253.  
 Diseased bones and teeth, virulent pus a characteristic of each, 2.  
 Disinfection of dental instruments by means of spirit of soap, 656.  
 Disks, sandpaper and corundum, prevention of catching of rubber-dam by, 82.  
 Dispensary, many opportunities for experimental work in, 1162.  
 Distilled water for the mixing of porcelain, 140.  
 District of Columbia Dental Society, 289.  
 union meeting of with Maryland State Dental Society, 969, 1066.  
 Donnally, Wms., on a national dental certificate of qualification, 1164.  
 on dental education, 492, 723.  
 on local anesthesia, 51.  
 Dotterer, J. P., on the shading of artificial teeth, 1046.  
 Doud, Albert, obituary of, 413.  
 Dougherty, T. E., on diseased antrum, 254.  
 Drainage for cavities containing thick pus, 992.  
 Drilling glass or porcelain, 81.  
 Drug-eaters, 537.  
 Drummond, Charles E., "Some Experiments with Trichloroacetic Acid," 458.  
 EASTERN Dental Society of the City of New York, 623.  
 Eaton, A. R., on peculiar form of tooth-decay above the gum, 274.  
 Echafolta, A. C. Hewett on, 258.  
 analgic effect of, 477.  
 Eckley, Wm. T. and Corinne B., "Regional Anatomy of the Face and Neck," review of, 410.  
 Education of the dentist, T. W. Brophy on, 128.  
 Educational problems, some embarrassing, W. C. Barrett on, 277.  
 Educational systems, W. C. Barrett on, 1132.  
 Electric currents of the oral cavity, 952.  
 Electric light for illuminating the mouth during dental operations, 43.  
 Electric mallet, advantages of, 392.  
 Electric mouth-lamp, 610.  
 Electric ozonation in the treatment of neuralgia, G. L. Curtis on, 1183.  
 Ellerbeck, Wm. L., "Possibilities in the Condensing of Gold Foils: Cohesive *versus* Non-Cohesive," 1048.  
 Elliott, Alban Vaughan, obituary of, 982.  
 Empyema, acute, of the maxillary sinus, 996.  
 Enamel and cementum margin, non-cohesive gold for the preservation of, 681.  
 Enamel cleavers, efficacy of those designed by A. G. Johnson, 137.  
 Enamel, fractures of more frequent in adult life than in youth, 916.  
 matrix of, 445.  
 not uniformly distributed, 916.  
 nourishment of, 511.  
 nutritional changes in, 506.  
 of the central incisors, Sylvester Moyer on, 183.  
 removal of dead, 354.  
 rods, peripheral, most prevalent at greatest convexity of tooth, 918.  
 rods, shaping of in preparing tooth-cavities, 1156.  
 vitality of, 1092.  
 Engine hand-pieces, protection for, 533.  
 Epithelioma caused by iodine, 788.  
 treatment of with X rays, 1267.  
 Epithelioma of the maxilla, arrested by injections of nectrianin, 90.  
 description of, 1268.  
 treatment of with X rays, 1269.  
 Epulids and their treatment, 525.  
 Ernsmere, J. B., "Some Additional Light on the Etiology of Pyorrhea Alveolaris," 359.  
 Erosion, dental, a case of, Robert S. Ivy on, 929.  
 clinical and chemical study of a case of, 889.  
 of dentin, 1297.  
 operative treatment of, 929.  
 some facts and conclusions regarding, 1207.  
 Erroneous localization of pain in dental disorders, 1081.  
 Eschelman, S., on administration of anesthetics by dentists, 283.

- Eschelman, S., on conservative treatment in orthodontia, 285.
- Essig, Charles J., obituary of, 78.  
on etiology of pyorrhea alveolaris, 828.
- Ether-and-nitrous-oxid apparatus, T. L. Bennett's experiments with, 214.
- Ether, greatest danger from after operation, 281.
- Ethetics in relation to "extension for prevention," 918.
- Ethical relation of dentist to patient, 611.
- Ethnographic odontography, A. H. Thompson on, 1184.  
importance of, 1184.  
special opportunities afforded dentists for study of, 1184.
- Ethyl bromid, to ascertain purity of, 525.
- Ethyl chlorid as an anesthetic, 989.  
in cold weather, on using, 200.  
in dental operations, 1094.  
rapid anesthesia by, 87.  
use of as a general anesthetic, 1204.
- Etiology of dental disease, J. D. Patterson on, 988.
- Eucauin solution, test-tube, for sterilization of, 463.
- Eucalypto-percha, disadvantages of, 1244.
- Eucalyptus oil in the treatment of root-canals, 1244.
- Evans, Geo., "Porcelain Inlay Work," 25, 358.
- Evans, Paul W., "Porcelain Work—General Considerations," 1170.
- Executive Council of the International Dental Federation, report by Dr. Sauvez, 35.  
election of officers, 36.  
report on behalf of to International Commission of Education, 37.
- "Extension for prevention," 152, 186, 188, 419, 914.  
definition of, 914, 1232.  
Jos. Head on, 1154.  
Marshall H. Webb on, 914.  
of approximal cavities, 153.  
susceptibility or immunity to decay a guide to practice of, 883.  
restatement of principles of, and some correlated subjects, 882.  
standpoints from which to consider, 914.
- Extirpation, immediate, of the pulp, 202.
- Extraction of teeth, guaiacol in, 784.  
some peculiar cases of, A. D. Hall on, 372.
- FACE, strength and symmetry of aided by strong normal occlusion, 15.
- Facial and dental harmony, 527.
- Facial and oral deformities in early life, 534.
- Facial and palatal restorations, 201.
- Facial neuralgia, benign, treatment of, 792.  
due to a hair irritating the membrana tympani, 85.
- Facial prosthesis, 526.
- Facings for crowns, how to select, 138.  
changes of color in, 143.
- Fahrenheit to centigrade, 1299.
- Failure of gold fillings, cause of, 152.
- Farinholt, L. W., on combination tin and gold filling, 1178.
- Fatty substances, absorption of by the skin, 856.
- Faught, F. Ashley, "Oral Hygiene," 1020.  
on a national dental certificate of qualification, 1163.
- Faulty crowns, 896.
- Faxon, F. S., on science as a teacher of prophylaxis, 584.
- Ferreby, T. G., "Dental Prophylaxis," 584.
- Ferris, A. N., "Vulcanite Rubber: Its Use and Abuse," 261.
- Filing between the teeth, 165.
- Filling-materials, compatibility of, a minor factor in saving teeth, 608.  
for deciduous teeth, 1092.
- Filling of incompletely developed root-canals, 777.
- Filling root-canals, Dr. Delos Palmer's method of, 356.  
with sealing wax, 356.
- Fillings, failure of often caused by lack of proper care of mouth, 66.  
how to insert to insure immunity from decay, 1154.
- Fill solidly the retaining pits of cavities, 1090.
- Finley, M. F., on a national dental certificate of qualification, 1163, 1167.  
on ethics as related to dental students, 938.  
on specialists in dentistry, 949.
- Finn, Wm., "Cavity Preparation," 262.
- Fire, a strange cause of, 85.
- First District Dental Society of Illinois, 998.
- First District Dental Society, State of New York, 493.
- First Graduating Class in Dentistry, Passing of (editorial), 520.
- First molars, malformed, peculiar condition of occlusal surface of, 369.
- First permanent molars, indications for extracting, R. E. Sparks on, 964.  
evils following extraction of, 645.  
more resistant to caries after twelfth year, 645.  
opinions of various dentists upon, 968.
- Fish, Wm. L., president's address, New Jersey State Dental Society, 1181.
- Flagg, Eben, on jumping the bite, 952.
- Flanagan, A. J., president's address, Northeastern Dental Association, 500.
- Florida State Board of Dental Examiners, 542.
- Floss silk for testing interdental spaces, 165.
- Fluid extract of geranium as a hemostatic, 82.
- Fetid breath, mouth-wash for, 415, 534.
- Food, some effects of the refinement of, 1088.
- Forcing out of a tooth by traumatism and its reimplantation twenty-one hours after the accident, 1206.
- Foreign Relations Committee of American Association of Dental Faculties, work of, 244.
- Formaldehyd in milk, a new test for, 656.
- Formalin, 200.  
as a disinfectant for the hands, 792.  
case of poisoning from, 1300.
- Foster, Sir Michael, on preliminary professional education, 1141.
- Foster, S. W., on extraction of impacted third molars, 157.  
on dental education, 723.  
on oral hygiene, 1038.
- Foul breath, remedy for, 415, 534.
- Fourth International Dental Congress (editorial), 976.
- Fracture of the jaw, treatment of without splint, 167.  
of the lower jaw, case of, 788.
- French, F., on amalgam, 366.
- Frisselle, Marcellus Mason, obituary of, 644.
- GABELL, Douglas, and Harold Austin, "Notes on Materia Medica, Pharmacology, and Therapeutics for Dental Students and Practitioners," review of, 1078.
- Galloway, W. P., "Cavity Preparation," 264.
- Ganoe, O. E., "The Benefits to be Derived by the Introduction of Dental Science and Education into the Public Schools," 261.

- Gargle for catarrh and hoarseness from cold in the throat, 789.
- Gastric disorders brought about by pyorrhea, 3.
- Gastric juice a destroyer of microbes, 2.
- Gelatin as a hemostatic, 415, 789.
- dangers in its use, 654.
- Gelatinizing bacteria, 426.
- Gelatinous plaques, 184.
- G. V. Black on, 426.
- General anesthesia induced by the application of a local anesthetic (correspondence), 1034.
- in the plethoric, 650.
- Georgia State Board of Dental Examiners, 542, 665.
- Georgia State Dental Society, election of officers, 762, 873.
- German silver, regulating bands, etc., to polish, 896.
- Germany, dental education in, 242.
- Germs, resistance of to light, 1298.
- Gillett, H. W., "Some Questions and Some Suggestions," 493.
- Gingivo-labial, buccal, and lingual angles, recurrence of decay at, 153.
- Gingivo-stomatitis, specific and septic, 784.
- Glossitis, case of, caused by a lower right molar, 90.
- Glycerin as a solvent for antiseptics, 1096.
- Glycogen in saliva, 188.
- Goadby, Kenneth W., on pyorrhea alveolaris, 885.
- Goddard, C. L., on "incisor and profile," 953.
- Godon, Ch., on dental education, 131.
- president's address before International Dental Federation, 1139.
- Goldan, S. Ormond, introduction of a new apparatus for the administration of nitrous oxid and oxygen, 40.
- report of cases anesthetized by, 216.
- on nitrous oxid and oxygen, 216.
- Gold, cohesive and non-cohesive, manipulation of, 154.
- how to use in cavities in upper bicuspids and molars, 160.
- irritation that may be caused by, 1187.
- non-cohesive, a preserver of tooth-structure, 1048.
- should children's teeth be filled with? 1184.
- soft, D. Tracy's method of using, 48.
- to make it cohere under all conditions, 202.
- Gold crowns, seamless, R. Kessell's method, 621.
- Gold dummies, filling of with cement, previous to soldering, 1056.
- Gold fillings, cavities for in pulpless teeth, 466.
- extension to prevent dislodgment of, 466.
- how to avoid undue pressure against, 466.
- one of the oldest on record, 415.
- "small" and "large," definition of, 1234.
- small approximal, why they fail, 1234.
- some methods used in, 151.
- starting of under cement, 1248.
- Gold foil, condensation of, cohesive *versus* non-cohesive, 1084.
- Gold inlays, advantages of over gold fillings, 819.
- copper-amalgam model for making, 819.
- formation of contour in, 817.
- Tileston's method of making, 815.
- Gold or porcelain inlays, indications for the use of, 156.
- Gold splint in the treatment of fracture, 167.
- Goldsmith, S. L., on hygienic bridge-work, 1160.
- Good, Robert, on the treatment of pyorrhea, 348.
- Goode, G., "Ethics," 743.
- Gorgas, F. J. S., "Questions and Answers," review of, 76.
- Gormly, T. A., president's address before Iowa State Dental Society, 248.
- Goslee, Hart J., on porcelain as an art in crown-work, 140.
- Gottstein's curette, 579.
- Gout and diabetes frequently associated with pyorrhea, 6.
- Grant, H. Horace, "A Text-Book of Surgical Principles and Surgical Diseases of the Face, Mouth, and Jaws," etc., review of, 1198.
- Gray, J. P., on artificial dentures, 1047.
- on dental education, 724.
- Greeley, Harvard, "A Combination of Plain and Gum Teeth," 329.
- Greenbaum, Leo, "Root-Fillings and Their Relative Value," 910.
- Greene, F. A., on the dentist's duty to his patient, 619, 620.
- Grievess, Clarence J., annual presidential address before District of Columbia Dental Society and Maryland State Dental Association, 969.
- on national dental certificate of qualification, 1166.
- Griffiths, Prof. Joseph, on mechanical training in the education of the surgeon, 1230.
- Guaiacol in dentistry, 201, 784.
- Gum blocks, adaptation of plain teeth to, 330.
- Gum borders, diseases of, 119.
- Gums, bleeding and flaccid, solution for, 224.
- diseased, treated by argentamin, 8.
- diseases of, J. Taft on, 749.
- electrical massage of, 842.
- spongy, trichloroacetic acid in treating, 460.
- Gutta-percha and cement, how to use in certain cavities, 159.
- Gutta-percha for setting crowns and bridges, 600.
- therapeutic value of, 201.
- G. V. Black Dental Club, 72.
- HADERUP, Dr., on dental education, 128.
- Hall, A. D., "Some Peculiar Cases of Extrusion," 372.
- "Hammer and nails," G. P. Wiksell on, 867.
- Hand disinfection, 689.
- Hand-pressure, advantages of in gold fillings, 152, 1299.
- Hand mallet for packing gold, 47.
- Hands, is it possible to render them aseptic? 299.
- Hardening plaster of Paris, 792.
- Hardisty, G. H., on dental prophylaxis, 954.
- Hard palate, osseous structure of, 555.
- Hard rubber, rapid method of producing regulating plates or partial dentures in, 300.
- Hardy, Geo. E., on making of gold inlays, 1179.
- on porcelain inlays, 382.
- Hare-lip and cleft palate, operation to correct, 652.
- Harlan, A. W., "The Basis of Dental Medicine," 853.
- on pulp-digestion, 852.
- Harris, Chapin A., the founder of modern dentistry, 277.
- Harris, John A., obituary of, 1201.
- Hart, John I., on the retention of abscessed teeth, 496.
- on filling children's teeth with gold, 1187.
- on the basis of dental medicine, 861.
- Hartford Dental Society, 1276.
- Harvard Dental Alumni Association, 538.
- 663, 872.
- Harvard Odontological Society, 395.



- Hatch, Henry D., on hygienic bridge-work, 1159.  
 on pulp-devitalization, 497.  
 "A Plan for the Furtherance of Scientific Research and the Elevation of Our Profession by Affiliation with the Carnegie Institute of Washington, D. C.," 753.  
 Haversian canal, contents of, 550.  
 Haversian lamellæ in canine fossa, structure of, 553.  
 Haversian system, structure of, 550.  
 Hawaii, Board of Dental Examiners for, 799.  
 Head, Joseph, on a new hemostatic, 1190.  
 on the comparative value of ordinary sealings for root-canal dressings as excluders of bacteria, 1148.  
 on "extension for prevention," 1154.  
 "The Hygiene of Bridge-Work as Exemplified by a Piece of Removable Porcelain Bridge," 1005, 1160.  
 Healthy maxillary antrum, opening of the sphenoidal sinus through, 38.  
 Heckard, W. A., "Continued Anesthesia with Nitrous Oxid, under Definite Pressure," 16.  
 "The Anesthesia Demonstration at the Indianapolis Meeting," 247.  
 Hematuria and gingival hemorrhage treated with turpentine, 82.  
 Hemorrhage, powdered charcoal for arrest of, 526.  
 Hereditary syphilis, relation of to imperfect dentition, 648.  
 three diagnostic signs of, 648.  
 Hermiston, Dr., on hereditary tendency to caries, 963.  
 on the use of amalgam in relation to health, 963.  
 Hert, B. S., "Cocain in Pulp-Extirpation," 275.  
 on the dentist's duty to his patient, 619.  
 Hewett, A. C., "Analgesics in Oral and Minor Surgery," 476.  
 on diseased antrum, 256.  
 Hewitt, Frederic W., the first to suggest an inhaler for the administration of nitrous oxid with oxygen, 17.  
 on nitrous oxid, 213.  
 Higher Entrance Standard (editorial), 516.  
 High-fusing porcelain, high resistance of to crushing power, 109.  
 Hill, Orville E., obituary of, 775.  
 Hinkins, J. E., "What Chemical Influence Has Saliva on Cement?" 564.  
 Hinman, T. P., on filling of upper bicuspids and incisors, 161.  
 Histology of the maxillary and mandibular bones, 549.  
 Hodgen, Joseph D., "Metallurgy: How to Teach It," 699.  
 Hodson, J. F. P., on cavity of absorption, 274.  
 Hoff, N. S., "A Study in Bleaching Teeth," 101.  
 "Class-Room Methods," 695.  
 Hofheinz, R. H., "Extension for Prevention," 914, 1157, 1232.  
 on preparation of cavities in incisors, 187.  
 on pyorrhea alveolaris, 360.  
 on the comparative value of ordinary sealings for root-canal dressing as excluders of bacteria, 1149.  
 on tooth-separation, 741.  
 Holland, Frank, on cohesive gold, 152.  
 on the use of non-cohesive *versus* cohesive gold for cervical margins, 1144.  
 Holland, S. G., obituary of, 1079.  
 Holmes, Edwin W., "Outlines of Anatomy," review of, 412.  
 Honesty and thoroughness *versus* quackery and advertising, 1212.  
 Honey for treatment of burns, 654.  
 Hopewell-Smith, A., "Histology of the Maxillary and Mandibular Bones," 549.  
 Hopkins, Samuel A., "Science as a Teacher of Prophylaxis," 502.  
 on pyorrhea alveolaris, 935.  
 "The Care of the Teeth," review of, 1284.  
 Hot carbolic acid, N. S. Jenkins on the use of, 245.  
 Howard, F. E., "Some Observations in Connection with Pyorrhea Alveolaris," 827.  
 on the dentist's duty to his patient, 620.  
 Howard University, Dental Department, commencement of, 627.  
 How I apply some theories of cavity preparation, W. W. Vance on, 266.  
 Huey, Robert, on burs and bur shavings, 53.  
 on local anesthesia, 50.  
 Hunt, Ralph S., obituary of, 524.  
 Hunter, Dr., on oral sepsis, 220.  
 Hurlbut, Jaius Searle, obituary of, 1285.  
 Hutchinson's teeth as a sign of syphilis, opinions of various authors upon, 649.  
 Huver, H. B., on nitrous oxid and oxygen anesthesia, 282.  
 on the dentist's duty to his patient, 619.  
 Hydrogen dioxide, care to be observed in the use of, 582.  
 to keep, 532.  
 Hygiene, teaching of, J. P. Corley on, 1035.  
 of bridge-work as exemplified by a piece of removable porcelain bridge, Joseph Head on, 1005.  
 systemic, with relation to the teeth, 1037.  
 Hygienic fillings, Levi C. Taylor on, 1245.  
 Hypodermic needle, sterilization of, 690.  
 Hypodermic syringes, 351.  
 Hypnotic suggestion in dental operations, 19.  
 Hypnotism, education of the public in regard to, 591.  
 and dentistry, 997, 1203.  
 ICHTHYOL, a compound, 1209.  
 to apply, 532.  
 Ideas and inventions, A. G. Bennett on, 819.  
 Illinois State Board of Dental Examiners, 397.  
 Illinois State Dental Society, 290, 399, 761.  
 Impacted third molar, removal of, 157.  
 Implanted teeth, nature of attachment of, 791.  
 Important Legal Decision (An), (editorial), 980.  
 Impressions, A. W. McCandless on, 825.  
 for plates with extension, 826.  
 of fractured mandible, method of taking, 1067.  
 of mouths with undercut teeth, 84, 559.  
 of the face, 790.  
 R. Ottolengui on the taking of, 446.  
 Improvement in rubber cups for polishing teeth, 1214.  
 Incisor, inlay for broken corner of, 379.  
 upper central, eruption of into middle of upper lip, 896.  
 Incisors, habitual unclean areas of, 184.  
 preparation of cavities in, 185.  
 resistance of the enamel of, 184.  
 Increased metabolism, effect of upon production of alkaloids, 1130.  
 Individuality in dental operations, 992.  
 Infantile pathology at the period of deciduous dentition, 420.  
 Infantile scorbutus, 535, 894.  
 Infantile scurvy, remarks on, 417.  
 Infirmary clinics in dental schools, G. V. Black on, 309.  
 management of with reference to their records, 310.  
 Inflammation, infective, definition of, 686.  
 Inflammatory affections of the antrum of Highmore, F. H. Rule on, 249.

- Inflammatory phenomena due to an unerupted third molar, 156.
- Inhalers for the administration of oxygen with nitrous oxid, some defects of, 17, 18.  
description of satisfactory, and cases illustrating their use, 18, 19, 20.
- Inlays, a "good fit" in, 535.  
for approximal cavities in incisors, 356.  
for grinding or occlusal surfaces, 595.  
gold and porcelain, 811.  
porcelain, to obtain the "right shade" in, 813.
- Institute of Dental Pedagogics, 289, 1303.
- Instruments for filling with gutta-percha, 159.  
small, sterilization of, 689.
- Interdental septa, osseous structure of, 553.
- Interdental splints, advantages of in fractures of the mandible, 1066.  
points to be observed in making, 1068.  
W. A. Montell on an improvement in, 1066.
- International Commission of Education, meetings of, 37, 126.  
officers, 128.  
president's address, at Stockholm, Sweden, August, 1902, 1221.
- International Dental Federation, meeting of, 34.  
organization of, referred to, 244.  
and Commission of Dental Education, 661, 1139, 1255.  
president's address, Prof. Ch. Godon, 1139.
- Interproximal spaces, consideration of condition of, James T. Meadors on, 163.  
importance of preserving, 136.  
restoration of by contour filling, 164.
- Interstate examinations for dentists (correspondence), 246.
- Intra-rhachidian anesthesia, 481, 533.
- Iodin, advantages of mixing glycerin with tincture of, 992.  
as a cause of epithelioma, 788.  
combinations of, 856.  
primary treatment of infected wounds, with, 300.  
solubility of in water, 856.
- Iodoform, to remove odor of from hands, 653.
- Iodoformol on gauze as a dressing, 1253.
- Iodo-sulfur or iodized sulfur, 1295.
- Iowa State Dental Society, meeting of, 193, 248, 291, 465.
- Iron, effect of upon the teeth, 370.
- Irrigation of wounds or large cavities, 1090.
- Irritation in gum borders, agents which may produce, 122.  
to prevent, 894.
- Ivy, Robert S., "A Case of Erosion," 929.
- "JACKET" crown, 113.  
construction of, 1063, 1065.
- James, F. B., "Necrosis of the Maxilla," 582.
- "Japanese Dentistry" (correspondence), 930.
- Japanese dentists, instruments used by ancient, 805.
- Jarvie, W., on cavities of absorption, 273.  
on "extension for prevention," 1152.  
on pyorrhea alveolaris, 353.  
on some thoughts on the packing of gold, 47.  
on X rays in dental operations, 347.
- Javanese method of narcosis, 1213.
- Jaw bones, essential characteristics of, 549.
- Jaws, compound fracture of both, 89.  
crushing power of, estimated as about one-hundredth of a horse-power, 9.  
decrease in size as brain increases, 15.  
stress of, not always directly exerted, 109.  
varieties of bones in, 550.
- Jenkins, N. S., "Porcelain Enamel," 456.  
"The Use of Hot Carbolic Acid," 245.
- Jewell, M. D., on the dentist's duty to his patient, 620.
- Johnson, George E., "The Human Face and Articulate Speech Divine," 322.
- Johnson, H. H., "An Idea in Crown-Work," 390.
- "Fracture of the Jaw: Report of Two Cases," 166.
- "President's Address," N. D. A., Southern Branch, 592.
- "Some Methods Used in Gold Fillings," 151.  
on cast fillings, 166.
- Johnson, Oliver, obituary of, 1286.
- Johnson, S. W., "An Artificial Molar and Its Functions," 1044.
- Jones, Mr., on treatment and correction of case of epithelioma of mucous membrane of roof of mouth, 39.
- Jones, P. H., on diseased socket, 256.
- Jones, R. H., on national dental certificate of qualification, 1164, 1167.
- Judgment a necessary factor in dental operations, 1153.
- KANSAS City Dental College, commencement of, 629.
- Kansas State Dental Association, 399, 540, 623.
- Kaposi, Prof., on the X-ray burn, 1266.
- Keokuk Dental College, commencement of, 632.
- Keyes, Wm. Baldwin, "Pyorrhea Alveolaris, with Special Reference to Practical Medicine," 1.
- Kingsley, Albigeance Waldo, obituary of, 776.
- Kingsley, N. W., on filling children's teeth with gold, 1187.  
on porcelain restoration, 357.  
on a case of general erosion, 1131.  
on manual education, 1141.
- Kirk, E. C., on the etiology of caries, 514.
- Klotz, C. E., on the treatment of roots with putrescent pulps, 959.
- Klump, Geo. V., on local anesthesia in dentistry, 50.
- LACUNÆ of bone, resisting nature of lining membrane of, and similarity to sheaths of Neumann in dentin, 550.
- Larynx, an artificial, 203.
- Lasting anesthesia, 653.
- Lead line upon the gums, an important factor in the diagnosis of lead-poisoning, 87.
- Leaky filling not always a bad filling, 1149.
- Lebanon Valley Dental Association, 541.
- Left ear, congenital absence of, replaced by prosthetic appliance, 526.
- Legacy of 1901 to 1902 (editorial), 72.
- Leptothrix racemosa, F. Vicentini on, 673.
- Le Roy, L. C., on cavities of absorption, 274.  
on the comparative value of ordinary sealings for root-canal dressing as excluders of bacteria, 1151.
- Lesions of the mouth, 530.
- Ligating teeth, care necessary in, 81.
- Ligatures, brass wire, advantages of in orthodontia, 454.
- Light, what kind is most injurious to the eye, 535.
- Lincoln Dental College, commencement of, 636.
- Linear determination of the human tooth form, 301.
- Line, J. Edward, "Fast and Slow Separation: Lesions Incident Thereto When Overdone," 738.
- Line of alkalinity, 189.

- Litch, Wilbur F., on the "gospel of the tooth-brush," 955.
- Little that is new under the sun, 790.
- Local anesthesia in dentistry, a statistical study of, M. I. Schamberg on, 22.
- cases illustrating the danger of, 51.
- cocain preferable to cocain for obtaining, 52.
- Local anesthetics should have a distinct place in dental surgery, 25.
- Local stypitic, 81.
- London, J. H., on national dental certificate of qualification, 1165.
- Lord, Benjamin, obituary of, 641.
- Louisiana State Board of Dentistry, 542.
- Louisville College of Dentistry, commencement of, 629.
- Lourie, Lloyd, on teaching of orthodontia, 946.
- Low, F. W., on surface markings upon the teeth, 371.
- Lowell, Mass., Dental Society, 395.
- Lower dental arch, influence of upon the upper, 227.
- Lower denture, reasons why it should be made first, 734.
- Lower jaw, necrosis of, 374.
- Luckie, R. K., on "extension for prevention," 153.
- "Report of Committee on Oral Hygiene," N. D. A., Southern Branch, 954.
- Ludy, R. B., "Answers to Questions Prescribed by State Dental Boards," review of, 770.
- Lupus of the face treated with ichthyol-sodium, 1211.
- Lycopodium an explosive, 299.
- Lymphatic hypertrophy, heredity in, 576.
- Lymphoid nodules, manner of diagnosing when hypertrophied, 577.
- Lymphoid tissue, structure of, and distribution in the throat, 576.
- Lysol, dangers in the use of, 1095.
- McALPINE, A. C., "The Ethical Relation of Dentist to Patient," 611.
- McCabe, Wesley D., "Suggestive Therapeutics," 589.
- McCandless, A. W., "Impressions," 825.
- MacDowell, J. N., "Orthodontia," review of, 409.
- Mackall, Richard Covington, obituary of, 523.
- McManus, Charles, "The Makers of Dentistry," 1105.
- McNeille, C. S., on adrenalin for arrest of hemorrhage after tooth-extraction, 95.
- Madden, J. J., "Surface Markings upon the Teeth," 367.
- Magnifying-glass, powerful, an important adjuvant of the dentist, 1155.
- Malformation and speech defects due to or associated with hare-lip or cleft palate, 652.
- Makers of dentistry, the, Chas. McManus on, 1105.
- Malignant growths in pharynx, varieties of, 579.
- Mallet, right-angle mechanical, devised by S. G. Perry, 44.
- Mallet force, introduction of, 151.
- Malocclusion, models showing the results of proper and improper treatment of, 228, 233.
- Mandible, centers of ossification of, 549.
- fractured, to take impressions of, 1067.
- movement of, 450.
- osseous structure of angle of, 555.
- Man's dental apparatus greatly reduced from that of the lower animals, 13.
- Manual training in dentistry, early recognition of value of, 536.
- Maritime Dental Association, 1276.
- Marshall, John Sayre, "Principles and Practice of Operative Dentistry," review of, 77.
- on the necessity of dental surgeons in the army, 1072.
- Maryland Board of Dental Examiners, 396, 1099.
- Maryland State Dental Association, 375, 485.
- and District of Columbia Dental Society, union convention of, 540, 663, 969, 1066.
- Massachusetts Board of Registration in Dentistry, 665, 1099.
- Massage of the gums in pyorrhea, 348.
- Mastication, importance of conservation of teeth in, 507.
- painful and difficult, a case of, 391.
- Masticatory apparatus compared to a lever of the third class, 10.
- Matrices, advantages offered by the use of, 571, 683.
- for inlays, to avoid distortion of, 812.
- of German silver, 1241.
- Wm. Crenshaw on, 393, 681.
- Matrix for porcelain inlays, gold *versus* platinum foils for, 27.
- necessity of for perfect adaptation of gold to cervical border, 570.
- platinum for, 384.
- the contour, Wm. Crenshaw on, 830.
- Maxfield, Dr., on wood polishing-points for engine, 513.
- Maxilla, necrosis of, F. B. James on, 582.
- Maxillæ, causes of necrosis of, 582.
- suppurative processes involving, 931.
- Maxillary and mandibular bones, A. Howell-Smith on the histology of, 549.
- Maxillary and mandibular regions, feeble reparative powers of, 559.
- Maxillary cysts, a contribution to the study of, 649.
- Maxillary sinus, clinical aspect of inflammation of, 249.
- diseases of, and their treatment by the dentist, 782.
- Meadors, James T., "Consideration of the Conditions of the Interproximal Space," 163.
- Mechanical training is essential to the dentist, 1230.
- in the education of the surgeon, 1230.
- Medical education, much of, not necessary to the study of dentistry, 728.
- Medical knowledge, necessity of for dentists, 992.
- Medical men not best qualified to act upon boards of dental examiners, 1231.
- Medico-Chirurgical College, Dental Department, commencement of, 765.
- Medico-legal standpoint, study of the teeth after death from, 1292.
- Meeker, C. A., on promotion of members to official place in dental societies, 1182.
- Menthol preliminary to anesthesia, 1095.
- Mercury bichlorid solutions, painless application of to mucous membranes, 1297.
- Metabolism, effects of emotion upon, 612.
- Methyl chlorid, anesthetic action of, 1212.
- Michaels, Jos. P., on characteristic features of the rheumatic diathesis, 1130.
- on chemical erosion of the teeth, 1129.
- work on saliva, 834.
- Microbic plaques, J. Leon Williams on, 1234.
- Micro-organisms, relation of to local and constitutional disturbances, 219.
- Microscope, reflex value of work with, 419.
- Miller, Carl B., "A Cleft-Palate Case," 571.
- Miller, W. D., on pyorrhea alveolaris, 827.
- "The Presence of Bacterial Plaques on the Surface of the Teeth and Their Significance," 425.
- Miller, Prof. Dr. W. D. (editorial), 770.
- Mills, G. A., on pyorrhea alveolaris, 828.



- Mills, Wm. A., "Anesthesia," 971.  
 "Oral Sepsis, Necrobiosis, Antisepsis, and Prophylaxis," 219.  
 on the Brophy operation for cleft palate, 974.  
 on dental education, 492.
- Milwaukee Medical College, Dental Department, commencement of, 875.
- Mind, influence of upon matter, 590.
- Mineral paints for introducing peculiar shades into porcelain work, 107.
- "Mischief-Breeding Neglect, A" (editorial), 296.
- Mississippi Board of Dental Examiners, 396, 542.
- Missouri State Dental Association, 290, 397, 540, 761.
- Mitchell, W., on the care of children's teeth, 960.  
 on dental education, 727.  
 on instrument sterilization, 719.
- Mixing porcelain, 140.
- Modeling composition, to remove pieces of from plaster model, 85.
- Models, making of by a new method, 1089.
- Modern crown- and bridge-work, J. L. Young on, 1062.
- Molars and bicuspidis, preparation of cavities between, 681.
- Molar in the maxillary sinus, 86.  
 third, difficult eruption of, 605.
- Molten zinc, deterioration in obviated, 534.
- Montell, W. A., "An Improvement in Interdental Splints," 1066.  
 on dental education, 491.  
 on a national dental certificate of qualification, 1166.
- Monthly Bibliography of Dental Literature, 96, 204, 303, 421, 548, 667, 799, 899, 999, 1105, 1216, 1304.
- Monthly Record of Patents Pertaining to Dentistry, 100, 208, 308, 424, 544, 672, 804, 904, 1004, 1104, 1215, 1308.
- Morbid growths of the palate, 82.
- Morgan, H. W., on dental education, 726.  
 on non-cohesive *versus* cohesive gold for cervical margins, 1144.  
 on oral hygiene, 389.  
 on reasons for recurrence of tooth-decay, 1145.
- Morrison, M. A., "Some Things Dentists Know Little About," 961.
- Morrison, W. J., on filling cavities with both non-cohesive and cohesive gold, 153.
- Morton, Prof. W. J., on X rays in dentistry, 1264.
- Morton, W. T. G., ether discovered by in 1846, 210.
- Most practical thing, the, 789.
- Mother's food during pregnancy, influence of upon tooth-structure, 619.
- Mouth a suitable breeding-place for bacteria, 1091.  
 diagnosis in, carried on largely by differentiation or exclusion, 788.  
 importance of keeping in a healthy condition, 1093.
- F. Vicentini on the origin of bacteria of, 673.  
 with soft ridges, to take an impression of, 449.  
 where teeth form undercuts, new method (Valderrama's) of taking impressions of, 559.
- Mouth-mirror, sterilizing of, 415.
- Mouth-wash, action of upon mucous membrane, 509.  
 formula for, 82, 223, 416.  
 in treatment of pyorrhea, 9.
- Moyer, Sylvester, "The Enamel of the Central Incisors," 183.
- Mummifying pastes, 418.
- Munroe, Grafton, on essential requisites of appliances for correction of malocclusion, 946.
- NAPHTHALIN in the manufacture of celluloid, 415.
- Nares not the proper avenue for the introduction of gas, 17.
- Nargol in the treatment of empyema of the antrum of Highmore, 202.
- Nasal method of nitrous oxid anesthesia, 1094.
- Nasal septum, deflection of, 993.
- National Association of Colored Dentists, 872.
- National Association of Dental Examiners, 661, 795, 976.
- National Association of Dental Faculties, 543, 661.
- National Dental Association, coming meeting of, 794.  
 Committee on Oral Hygiene in Public Schools, 400.  
 change in date of meeting, 538, 660.  
 Section IV, 543, 660, 794.
- National Dental Association, Southern Branch, 72, 150, 193, 385, 592, 717, 843, 938, 1035, 1145.  
 Committee on Materia Medica, Therapeutics, and Pathology, report of, 843.  
 election of officers, 1147.
- National dental certificate of qualification, H. J. Allen on, 1167.
- National University, Dental Department, commencement of, 764.
- Navy Dental Bill (editorial), 194, 403.  
 resolutions concerning passed by the New York Odontological Society, 852.
- Nebulizer for introducing remedies into diseased antrum, 256.
- Necrosis or caries of bone, necessity of administering tonics to patients suffering with, 582.  
 treatment of with acid solutions, 856.
- Necrosed roots, amputation for, 921.
- Necrosis of the lower jaw following scarlet fever, 894.
- Nectrianin, injection of in epithelioma of the maxilla, 90.
- Nervocidin, 791.
- Nervous diseases, treatment of by suggestion, 590.
- Nervous patients, controlling, 996.
- Neuralgia following the grippe, 738.  
 electric ozonation in the treatment of, 1183.  
 of the tongue, caused by too narrow a plate, 650.
- Neuro-regional anesthesia, 211.
- Neurosis, a predisposing cause of pyorrhea, 122.
- New anesthetics, 1210.
- New Brunswick Dental Society, election of officers, 1072.
- New England Alumni Association of the Philadelphia Dental College, 287, 1097.
- New England Association of Dental Examiners, 624.
- New Hampshire Dental Society, 1214.
- New Hemostatic, a, Jokichi Tokamine on, 1189, 1190.
- New Jersey Board of Dental Examiners, 666, 798, 1098.
- New Jersey State Dental Society, 193, 664, 797, 1181.  
 committee on art and invention, 540.  
 president's address, Wm. L. Fish, 1181.
- New Orleans College of Dentistry, commencement of, 624.
- New York College of Dentistry, commencement of, 635.
- New York Dental School, commencement of, 875.

- New York Odontological Society, proceedings of, 39, 272, 342, 605, 852, 1260.  
 notice of anniversary meeting of, 71, 1303.  
 New York State Dental Society, 290, 539, 832.  
 correspondent's report at annual meeting on furtherance of scientific research, 753.  
 election of officers, 761.  
 report of committee on practice, 832.  
 Nicholson, C. H., on the ethical relation of dentist to patient, 613.  
 Niles, S. N., on pyorrhea alveolaris, 827.  
 Nitrous oxid and oxygen, cases of prolonged anesthesia with, 215.  
 compared with ether and chloroform, 218.  
 conclusions arrived at after thirteen years' experience with, 213.  
 F. W. Hewitt's experiments with, 213.  
 operations performed under, 282.  
 Nitrous oxid anesthesia, continued, under definite pressure, W. A. Heckard on, 16.  
 Nitrous oxid, advantages of addition of oxygen to, 16.  
 contra-indications to its use as preliminary anesthetic, 984.  
 dangerous state in anesthesia with, 16.  
 hints on how to apply, 1095.  
 its use in soldering, 1063.  
 precautions to be observed previous to using, 985.  
 warm, more active than cold, 19.  
 with ether, dangers of, 972.  
 Noble, Henry Bliss, obituary of, 413.  
 Noble, Joseph H., "To Adjust the Parts of a Broken Vulcanite Denture, and Get a Broken Model of the Same," 340.  
 "Test Tube for Sterilizing Eucaim Solutions," 463.  
 Noel, L. G., "An Alveolar Abscess, with Opening upon the Outside of the Face, Caused by Death of the Pulp in a Third Molar, Independent of Caries," 562.  
 "On the Management of Permanent Superior Incisors and Bicuspsids," 158.  
 on artificial dentures, 1045.  
 Noma, etiology of, 652, 1298.  
 caused by action of many micro-organisms, 652.  
 Non-cohesive gold in cylinders, 994.  
 advantages of in cervical margins, 570.  
 condensation of in connection with matrices, 684.  
 duration of, 153.  
 for small cavities between front teeth, 161.  
 versus cohesive gold for cervical margins, 569.  
 Nones, Robert H., "Classroom Methods of Teaching," 460.  
 Normal occlusion, important points in connection with, 227.  
 North, Gustavus, "Dental Questions and Answers on Temperament," review of, 1078.  
 North Carolina State Board of Dental Examiners, 543, 665.  
 Northeastern Dental Association, 500, 729, 867, 931, 1048, 1098.  
 Northern Illinois Dental Society, 1098.  
 Northern Indiana Dental Society, 998.  
 Northern Iowa Dental Society, 799, 899, 1073.  
 Northern Ohio Dental Association, 663.  
 North Pacific Dental College, commencement of, 766.  
 Northrop, A. L., on some thoughts on the packing of gold, 45.  
 Northwestern University Dental School, commencement of, 764.  
 Nose surgery, 653.  
 Noyes, E., on the care of children's teeth, 960.  
 Nuclein, description of, 1129.  
 Nyman, J. E., on porcelain as an art in crown-work, 135.  
 OBTURATOR, definition of, 573.  
 Occlusion, perfect, 995.  
 Odontalgia, 653, 655.  
 Odontocures, 842.  
 Odontographic Society, Chicago, 192, 1303.  
 Offensive breath, gargle for, 84.  
 Ohio College of Dental Surgery, commencement of, 626.  
 Ohio State Board of Dental Examiners, 1215.  
 Ohio State Dental Society, officers for 1902, 71, 1214.  
 Ohio Valley Dental Society, 624.  
 Oils, essential, to be avoided in treating root-canals, 1243.  
 Old amalgam filling, an, 790.  
 Old Roman dental instruments from the Saalburg museum, 1292.  
 Ontario Dental Society, proceedings of, 958, 1058.  
 Operating room, J. J. Mills' method in, avoiding display of instruments and drugs, 623.  
 Operative and prosthetic dentistry, arrangement of courses in, 309.  
 Operative dentistry, C. A. Bland on, 530.  
 Opium necrosis treatment of, 1209.  
 Oral hygiene, report of Committee of N. D. A., Southern Branch on, 388.  
 L. A. Faught on, 1020.  
 Oral sanitation, dangers attending neglect of, 934.  
 Oral sepsis, necrobiosis, antiseptics, and prophylaxis, Wm. A. Mills on, 219.  
 Ordinary sealings for root-canal dressing as excluders of bacteria, A. E. Webster on, 925.  
 Organisms of a septic mouth, 2.  
 Orthodontia as a specialty, E. H. Angle on, 905.  
 conservative treatment in, 225.  
 how regarded by students, 908.  
 in relation to temperament, 788.  
 neglect of study of by dental profession, 906.  
 partial review of current literature on, 950.  
 progress of, 906.  
 should be practiced as a specialty, 909.  
 356 years since first practiced, 906.  
 Orthoform, 1300.  
 Osmosis of cocaine through dentin, 1298.  
 Osmun, J. Allen, on filling children's teeth with gold, 1188.  
 on protection of the dental profession against illegal practitioners, 1182.  
 Osteo-myelitis, of dental origin, complicated with tic-douloureux of the lower lip, 779.  
 Ottolengui, Rodrigues, "Artificial Dentures in Relation to the Impression, Taking the Bite, and Articulation," 446.  
 "Should Children's Teeth be Filled with Gold?" 1184.  
 on "extension for prevention," 1154, 1156.  
 on the comparative value of ordinary sealings for root-canal dressing as excluders of bacteria, 1150.  
 on the making of radiographs, 1271, 1272.  
 Our invisible foes, 655.  
 Oval-shaped burs, advantages of over angular, 54.  
 Overhanging fillings, annoyance due to, 164.  
 Oxygenation of blood, functional activity in a diseased region restored by, 1183.  
 Oxyphosphate cement, action of on dental pulps, 655.

- Oxyphosphate for obtaining cavity impressions in inlay work, 28.
- PAGLIARI, water of, 1091.
- Pain, erroneous localization of in dental disorders, 1081.  
incident to the thrust of a hypodermic needle, how to avoid, 482.  
in filling teeth, nine-tenths of inflicted in preparation of cavity, 264.
- Painless extirpation of the pulp of a lower right molar, Geo. E. Hardy on, 376.
- Painless extraction of teeth in children, 1091.
- Palatal paralysis, 1083.
- Palinger, N. L., on general anesthesia induced by a local anesthetic, 1034.
- Palmer, Corydon, on the packing of gold, 46.
- Palmer, S. B., "A Scientific Mention of a Primary Law that Necessitates Extension for Preservation," 167.
- Papain, 534.
- Papot, Ed., and E. Sauvez, "Proceedings of Third International Dental Congress, Paris, 1900," review of, 1077.
- Paraffin for filling incompletely developed root-canals, 777.
- Paraffin prosthesis, 646, 1093.
- Pathology, definition for, 855.
- Patterson, Callender, obituary of, 199.
- Patterson, J. D., on foreign dental education and its equivalent in American dental colleges, 1191.  
on pyorrhea alveolaris, 827.
- Pearsall, W. Booth, on the linear determination of the human tooth-form, 301.
- Pearson, Chas. E., "The Building of Contour Amalgam Fillings in Molar Teeth," 1238.
- Peirce, C. N., "The Past and Present in Dentistry," 316.  
on pyorrhea alveolaris, 827.
- Pennsylvania Association of Dental Surgeons, 70, 1275.
- Pennsylvania Board of Dental Examiners, 396, 665, 1215, 1302.
- Pennsylvania College of Dental Surgery, commencement of, 626.
- Pennsylvania Dental Law, constitutionality of, 292.
- Pennsylvania State Dental Society, proceedings of, 50, 799.
- Pericemental inflammation following pulp devitalization, 1242.
- Pericementitis, gelsemium sulfate in the treatment of, 857.
- Peridental membrane, structure of, 739.
- Peripheral enamel rods most prevalent at the greatest convexity of the tooth, 918.
- Periostium, structure of, 551.
- Perkey, Frank Z., "The Anesthesia Demonstration at the Indianapolis Meeting," 246.
- Permanent bridge for artificial second molar, 1160.
- Permanent separation, advantages of, 160.
- Permanent upper bicuspid and incisors, management of, L. G. Noel on, 158.
- Perry, S. G., on electric light for illuminating oral cavity, 43.  
on the packing of gold, 45.  
on the partial resistance of the pulp to arsenic, 342.  
on porcelain inlays, 355.  
right-angle mechanical mallet devised by, 44.
- Pharyngeal lymphoid tissue, hyperplasia of, with special reference to primary tuberculosis of the pharyngeal tonsil, 781.
- Pharyngeal tonsil, pathological structure of, 577.
- primary tuberculosis of, 781.  
varieties of hypertrophy of, 576.
- Pherrin, J. B., on diseased antrum, 255.
- Philadelphia Academy of Surgery, 288.
- Philadelphia Dental College, commencement of, 630.
- Physical signs, to determine in living subjects, 983.
- Phosphor-necrosis, 651.
- Physical diagnosis as related to dental college curricula, 983.
- Physical manifestations resulting from influences upon the mind, 590.
- Physicians, ignorance of upon dental matters, 920.
- Physics, definition of, 1223.
- "Physiological," its true meaning, 1297.
- Physiological effects of depressing emotions, 612.
- Physiology, definition of, 1224.
- Pittsburg Dental College, commencement of, 630.
- Place Them on the Free List (editorial), 196.
- Placing of rubber dam on badly decayed teeth, to facilitate, 993.
- Plagiarism, a charge of (correspondence), 125, 340.
- Plaster casts, how to harden, 1093.
- Plaster fillings of metallic salts, 989.
- Plaster impressions where the teeth form undercuts, J. Valderrama y Barrenechea on, 559.  
method of obtaining accurate, for vulcanite work, 449.  
removal of, 896.
- Plaster of Paris (editorial), 1195.
- Plates, full upper, advantages of extending, 826.
- Platinum saddles in bridge-work, 57.
- Plethoric individuals, to produce general anesthesia in, 650.
- Plugger points with triangular ends, advantages of, 45.
- Plumbism, some rare cases of, 894.
- Pneumococcus a common inhabitant of the oral cavity, 83.
- "Point of contact," of the teeth, 435.  
in incisors and bicuspid, 164.
- Points in socket handles, to fix, 1211.
- Polishing teeth with red cedar sticks, 516.
- Politics in connection with the establishment of a uniform dental standard, 1167.
- Popular dental education, 1094.
- Porcelain, always shrinks toward its greatest bulk, 1173.  
application of previous to burning, 110.  
average fusing-point of is 2600° F., 1173.  
best mix of made with simple distilled water, 1172.  
examination of, 458.  
high-fusing, V. Walter Gilbert on, 622.  
high- and low-fusing, respective advantages of, 1172.  
how to imitate color of devitalized tooth with, 383.  
in crown-work, F. J. Capon on, 106.  
its cleanliness an advantage in prosthetic work, 1158.  
low-fusing, disadvantages of, 811.  
over-fusing, effects of, 385.  
precautions to avoid black specks in finished piece, 110.  
preparation of cavities for, W. A. Capon on, 377.  
should be well dried before baking, 1172.  
to have strength must have bulk, 1137.  
to restore incisive edges of anterior teeth with, 1137.
- Porcelain bodies, how to use various, 29.  
to apply, 145.
- Porcelain bridge-work, 610, 704.  
removable, construction of, 1006.
- Porcelain crowns, attachment of to root without dowel or pin, 115.  
baking of, 110.



- Porcelain crowns, indications and contra-indications for using, 142.  
making of bands for, 113.  
stronger than porcelain-faced crown with metal back, 143.
- Porcelain enamel, 456.
- Porcelain facings, grinding of glossed surface to improve appearance, 111.  
replacement of in bridges, 622.  
swaging machine for backing, 599.  
to lessen the danger of cracking, 81.
- Porcelain fillings, localities where they are desirable, 595.  
permanence of, 594.
- Porcelain inlay and gold filling, combination of, 32.
- Porcelain inlays, 529.  
anchorage of for incisal corners, 814.  
closeness of their meeting edges with those of enamel, 33.  
etching of base of, 32.  
for various tooth-cavities, 378, 381.  
indications for the use of, 156.  
in deep cavities, 1091.  
where they should be used, 26.
- Porcelain "jacket-crown," W. A. Capon on, 375.
- Porcelain restoration of broken-down tooth-tissue, 57.
- Porcelain roots, M. L. Rhein on, 919.  
method of placing, 922.
- Porcelain shades which burn out readily, 814.
- Porcelain substitute for tooth in which attachment has been lost, 352.
- Porcelain teeth, danger of their cracking during soldering process, 1055.
- Porcelain work, cases to which it is suited, 1173.  
electric furnace for, 1176.  
experience the best teacher in, 1171, 1176.  
general considerations in, Paul W. Evans on, 1169.  
matching color of natural teeth in, 1174.  
matrix for, 1174.  
selection of furnace for, 1172.  
specially adapted to nervous patients, 529.  
wax should never be used in making matrix for, 1176.
- Posts for crowns, length of for, different teeth, 137.  
of square and round wire, 146.
- Potassium nitrate in the treatment of scurvy, 81.
- Potassium permanganate, incompatibilities of, 654.  
and thymol lotion, 1091.
- Potassium sulfate in investing material, 81.
- Power, James E., "Errors in Diagnosis," 1248.
- Practical cases of diseased antrum, 253.
- Pregnancy in its relation to dental caries, 962.
- Preliminary anesthesia by nitrous oxid, report of 150 cases of, compared with 150 cases of plain etherization, 984.
- Preliminary requirements for admission to dental colleges, difficulties met in establishing universal, 236.
- Premature eruption of teeth, 883.
- Preventive dentistry, 1206.
- Primrose, F., "The Status of the Dental Profession," 485.
- Priority in dental operations, 86.
- Probyn-Williams, R. J., "A Practical Guide to the Administration of Anesthetics," review of, 409.
- Prophylaxis against infection, 82.  
definition of, 855.  
of cavity preparation, 155.  
science as a teacher of, 502.
- Proseus, F. W., on the ethical relation of the dentist to his patient, 615.
- Prosthesis made subordinate in English dental colleges, 240.
- Prosthetic dentistry, Geo. H. Wilson on teaching, 709.  
report of committee on, N. D. A., So. Br., 1042.
- Protargol, 81.
- Protoplasm, alkalinity of, 856.
- Ptomains, poisonous properties of various, 1128.
- Ptyalin, favorable action of in acid media, 567.  
function of, 564.
- Publisher's notice, 96.
- Pullen, Herbert A., "Conservative Treatment in Orthodontia," 225.  
on extraction of first permanent molars, 965.  
on the laws of articulation, 945.
- Pulp-canal broaches, how to temper, 498.  
the Perry variety, 495.
- Pulp, capping of with formalin cement, 344.  
devitalization and removal of previous to tooth-crowning, 136, 1055.  
enlargement of canal of with sulfuric acid, 497.  
exposed, protection of, 343.  
extirpation of by means of cocaine, 494.  
extirpation of preparatory to crowning teeth, 1052.
- Harlan's formula for digestion of, 853.
- in deciduous teeth, 532.
- manner of applying paste to digest, 853.
- mummification of, A. R. Cooke on, 833.
- physiological function of, 1298.
- refractory to arsenic, devitalization of, 535.
- removal of remnants of, 894.
- resistance of apical foramen of to arsenic, 342.
- should be removed before the fitting on of gold cap, 56.
- Pulpitis successfully treated with guaiacol, 784.
- Pulpless teeth, treatment of, 654.
- Pus-pockets in pyorrhea, treatment of, 8.
- Putty as a root-filling material, 91.
- Pyorrhea alveolaris a rheumatic expression, 1.  
as a result of loss of interproximal space, 136.  
a sequela of various general disorders, 885.  
brought about by the use of coffee, 359.  
caused by certain drugs, 829.  
clinic including treatment of, by R. Good, 599.  
devitalization of pulps in treatment of, 829.  
R. Good on, 348.  
in its relation to affections of the stomach and heart, 2.  
in olden times, 827.  
its causes and treatment, 1086.  
may occur epidemically, 885.  
necessity of determining whether any root of a multi-rooted tooth has lost attachment in treating, 351.  
rarely more than one socket involved at first, 932.
- prosthetic *versus* medicinal treatment in, 1.  
some observations in connection with, 827.  
some predisposing causes of, 123.  
syphilis as the cause of, 828.  
systemic nature of, 122.  
treatment of by early Japanese dentists, 806.  
treatment of with X rays, 1267.
- trichloroacetic acid in the treatment of, 459.

- Pyorrhea alveolaris, cocain in treating, 348.  
with special reference to practical medicine, Wm. Baldwin Keyes on, 1.  
Pyrozone, 25 per cent. satisfactory results of in tooth-bleaching, 104.
- QUININ as a hemostatic and antiseptic, 886.  
as a styptic and antiseptic, 792.
- RADIOGRAPHS, dental, preparation of film for, 1261.  
of abscesses, 1272.
- Ramus of the mandible, complete necrosis of consecutive to an acute osteitis of dental origin, 89.
- Range of vision, 993.
- Rapid anesthesia by ethyl chlorid, 87.
- Reading (Pa.), Dental Society, meeting of, 192.
- Recent Legislation and the D. D. S. Degree (editorial), 977.
- Recurrence of decay, divided into two classes, 882.
- Recurring decay at the gum margins or around fillings, to stop, 83.
- Reducing the strength of an acid, 1090.
- Reflex irritation caused by improperly filled root-canals, 833.
- Regulating a lower incisor placed within the arch, 344.
- Reimplantation of a tooth twenty-one hours after accident which forced it out, 1206.
- Remonstrance (A) from India (correspondence), 464.
- Removable bridge-work, Dr. Freeman's method of attaching, 1158.
- Removable porcelain bridge, hygiene of bridge-work exemplified by, 1005.
- Removal of stains caused by chemical agents, 101.  
of suspicious growths and ulcers in the mouth for microscopical examination, 987.
- Removing cemented-in crown-pins by chemical means, 1203.
- Replacing facings; a quick method, 1301.
- Reply to the Secretary of the Committee on Foreign Relations of the N. A. D. F. (editorial), 1193.
- Repolishing an entire gold piece after repairing, how to avoid, 415.
- Report of committee on life insurance, N. D. A., So. Br., 949.  
of committee on oral hygiene, N. D. A., So. Br., 954.  
of committee on orthodontia, N. D. A., So. Br., 943.  
of committee on practice. New York State Dental Society, 832.  
of correspondent (H. D. Hatch) on a plan for the furtherance of scientific research, 753  
of secretary-general (E. Sauvez), I. D. F., 1255.
- Restoration of the incisive edges of the anterior teeth with porcelain, Levitt E. Custer on, 1137.
- Retarded eruption of a canine, 83.
- Retension grooves for fillings, 265.
- Rhein, M. L., on the development of apical end of root with pulp partially alive, 343.  
on comparative value of ordinary sealings for root-canal dressing as excluders of bacteria, 1148.  
on "extension for prevention," 1155.  
on filling children's teeth with gold, 1186.  
on pyorrhea alveolaris, 349.  
on X rays in dental operations, 346, 1273.  
"Porcelain Roots," 919.
- Rhythmical subluxations of the lower jaw to prevent chloroform syncope, 1090.
- Richmond, Cassius M., obituary of, 643.
- Richmond crowns, making of perfect joint in when solder has failed to flow, 376.
- Rinsing mouth after extraction, inadvisability of, 83.
- Robinson, Henry A., obituary of, 414.
- Roe, W. J., on local anesthesia, 51.  
"Will Nitrous Oxid and Oxygen Supplant Ether and Chloroform in General Surgery and Nitrous Oxid Alone in Dental Surgery?" 209.
- Roentgen rays, first demonstration of in the United States, 1264.
- Root-amputation for the cure of abscesses, 385.
- Root-canal treatment, caroid solvent as an agent in, 913.  
various methods of, 911, 912.
- Root-canals, filling of, in the upper teeth, 1244.  
filling of with cotton, 1244.
- Root-filling, a new material for, 92.
- Root-fillings and their relative value, Leo Greenbaum on, 910.
- Roots, badly decayed, restoration of with amalgam, 111.  
banding of for crowns, when advisable, 144.  
destroyed by crowning, 995.  
preparation of for the reception of crowns, 108.
- Rosenbluth, E. S., "A Legal Identification," 1029.
- Rose, W. S., a poem on "Extension for Prevention," 182.
- Ross, J. F., on construction of the "jacket crown," 1065.
- Roster of Dental Surgeons, U. S. Army, 402.
- "Royal Mineral Succedaneum," 362.
- Roy, Dr., on dental education, 129.  
proposition of to International Commission of Education to obtain reports on dental legislation and education, 132.
- Rubber and aluminum plates, 82.
- Rubber and cloth bags as receivers for nitrous oxid gas, 17.
- Rubber cups for polishing teeth, an improvement in, 1214.
- Rubber dam for all operations, 992.  
placing of upon badly decayed teeth, 993.  
to retain without using clamps, 376.  
why it should always be applied, 417.
- Rubber plate, to mend, 992.  
the finishing of, 1296.
- Rubber work, repairing of, 653.
- Rule, F. H., "Inflammatory Affections of the Antrum of Highmore," 249.
- Rust, D. N., on filling a cavity without using the rubber-dam, 1178.
- Rusting of the inside of hypodermic needle, to prevent, 299.
- Ryder, John, on occlusal force in animals, 10.
- SADDLE bridge, advantages of over removable bridge, 1006.
- Salicylic acid and ratany as a mouth-wash, 9.
- Saliva, acids in, 609.  
alkalinity of, 564, 567.  
a natural protector against dental caries, 536.  
antiseptic properties of, 568.  
an unfavorable medium for the development of certain pathogenic bacteria, 568.  
appliance to check secretion of from Stenson's duct, 598.  
chemical composition of, 564.  
constituents of, 565.  
how to exclude it in cavities extending below gum margin, 830.  
increase of sulfocyanids of during intense anger, 613.

- Saliva, Müller, Erick, on the formation of, 565.  
 nature of in progressive caries, 502.  
 quantity secreted daily, 564.  
 reaction of in people and animals, 183.  
 toxicity of, 567.  
 viscosity of, 566.
- Salivary calculus in the submaxillary gland, diagnosed by X rays, 525.
- "Same Old Thing: Its Cause and Treatment" (editorial), 877.
- Sandarac varnish, 789.
- San Diego, Cal., Dental Society, 623.
- Sanford, L. P., "The Dentist's Duty to His Patient," 616.
- Sanger, R. M., on "extension for prevention," 1153.  
 on filling children's teeth with gold, 1187.
- Sarrazin, Jules J., report of to N. D. A., So. Br., for committee on operative dentistry, 154.  
 on dental ethics in relation to dental students, 939.  
 on inflammatory phenomena due to an unerupted third molar, 157.
- Save your disks and finishing strips, 1298.
- Sauvez, E., report of to International Commission of Education on behalf of Executive Council of I. D. F., 35.
- "Proceedings of Third International Dental Congress, Paris, 1900," review of, 1077.  
 secretary's report before I. D. F., for year 1901-2, 1255.
- Schamberg, Morris I., "A Statistical Study of Local Anesthesia in Dentistry," 22.
- Shrivers, F. M., on vulcanite rubber, 261.
- Schwartz, Geo. W., "A Case of Porcelain Bridge-Work," 704.
- Science, definition of, 1248.  
 as a teacher of prophylaxis, Samuel A. Hopkins on, 502.
- Scurvy, infantile, 417.
- Sealing wax for root-fillings, Wm. Carr on, 356.
- Sealing for root-canals, necessary qualities for, 925.  
 results of laboratory experiments with, 926.
- Second Italian Odontological Congress, 289.
- Self-cleansing areas not always immune to decay, 914.
- Sensation, explanation of the phenomena of, 690.
- Sensitive dentin, obtundent for, 1210.  
 treatment of, 87, 791.
- Sensitive tooth successfully obtunded with hot carbolic acid, 245.
- Separating teeth with gutta-percha, 165.
- Separation, temporary, of central incisors and bicuspid, 160.
- Septic and polymicrobial affections, 784.
- Septic gingival catarrh, disease of the gum borders and sockets of the teeth, 119.
- Sequestrum, when to remove, 582.
- Seventh and Eighth District Dental Societies of the State of New York, notice of union meeting, 1098.
- Seventh District Dental Society of the State of New York, 291, 736.
- Sewill, Henry, "Dental Surgery," etc., review of, 297.
- Sexuality, influence of in tooth-development, 529.
- Seymour, Geo. S., resolutions of regret on death of, 1202.
- Shades, imitation of with mineral paints, 107.
- Sharpey's perforating fibers, 551.
- Shedding of teeth as a "tabetic arthropathy," 82.
- Shock, delusive condition in, 654.
- Shock produced by malleting gold into a cavity, serious after-effects of, 1146.
- "Sialo-Semeiology" (editorial), 639.
- Silver paste, introduction of by Taveau, 364.
- Silver salts, new, 1210.
- Silver solder, formula for, 81.
- Silver vitellin, 894.
- Simon, W., "Manual of Chemistry," review of, 521.
- Simpson, Richard L., "An Ideal Bicuspid Crown," 328.  
 on making an ideal bicuspid crown, 1177.
- Simpson, Sir James, chloroform discovered by in 1847, 210.
- Singular fatality, 82.
- Sixth District Dental Society of the State of New York, 399.
- Skill, a defective standard of, 404.
- Sleet, J., on causal conditions in dental caries, 963.
- Smale, M., and J. F. Colyer, "Diseases and Injuries of the Teeth," review of, 774.
- Smith, B. Holly, on national dental certificate of qualification, 1165.  
 on oral hygiene, 1180.
- Smith, D. D., on betterment of tooth-structure, 956.
- Smith, M. C., on diagnosis and treatment of adenoids, 956.
- Smith, W. W., on the dentist's duty to his patient, 617, 621.
- Snow, S. R., on nitrous oxid and oxygen anesthesia, 280.
- Snyder, Henry F. R., on a case of sarcoma in the sphenomaxillary fossa, 1179.  
 on dental education, 492.
- Soapstone in the dental office, 993.
- Société Odontologique, Paris, election of officers, 762.
- Society of Professors of Dentistry of the German Universities, petition by to the Federal Council, 998.
- Sodium bicarbonate in empyema, 653.
- Sodium dioxide, analogy of to hydrogen dioxide, 83.  
 chemical test for, 532.
- Soldering, important precautions in, 1054.
- Soldering investment, 1054.
- Soldering lamp, 1058.
- Some methods used in gold fillings, H. H. Johnson on, 151.
- Some things dentists know little about, M. A. Morrison on, 961.
- Somnoform, 525, 658, 892.
- Sossaman, O. H., "Practical Cases of Diseased Antrum," 253.
- Soreness of gums from application of clamps to teeth, to prevent, 789.
- South Carolina State Dental Association, 399.
- South Dakota State Board of Dental Examiners, meeting of, 71, 666, 798, 1302.
- Southern California State Dental Association, 998, 1098.
- Southern Dental Association, appointment of committee on preparation of history of, 395.
- Southern Dental Society of New Jersey, 288.
- Southern Wisconsin Dental Association, 400.
- Southwest Virginia Dental Society, 1275.
- Spence, Stewart J., "A Horoscope of Dentistry," 332.
- Special degree, a, 1209.
- Specialists in dentistry, J. P. Corley on, 948.
- Spinal anesthesia, 416.
- Sponge-grafting in necrosis, 582.
- Spoon excavator and round bur for removing dentin, 265.

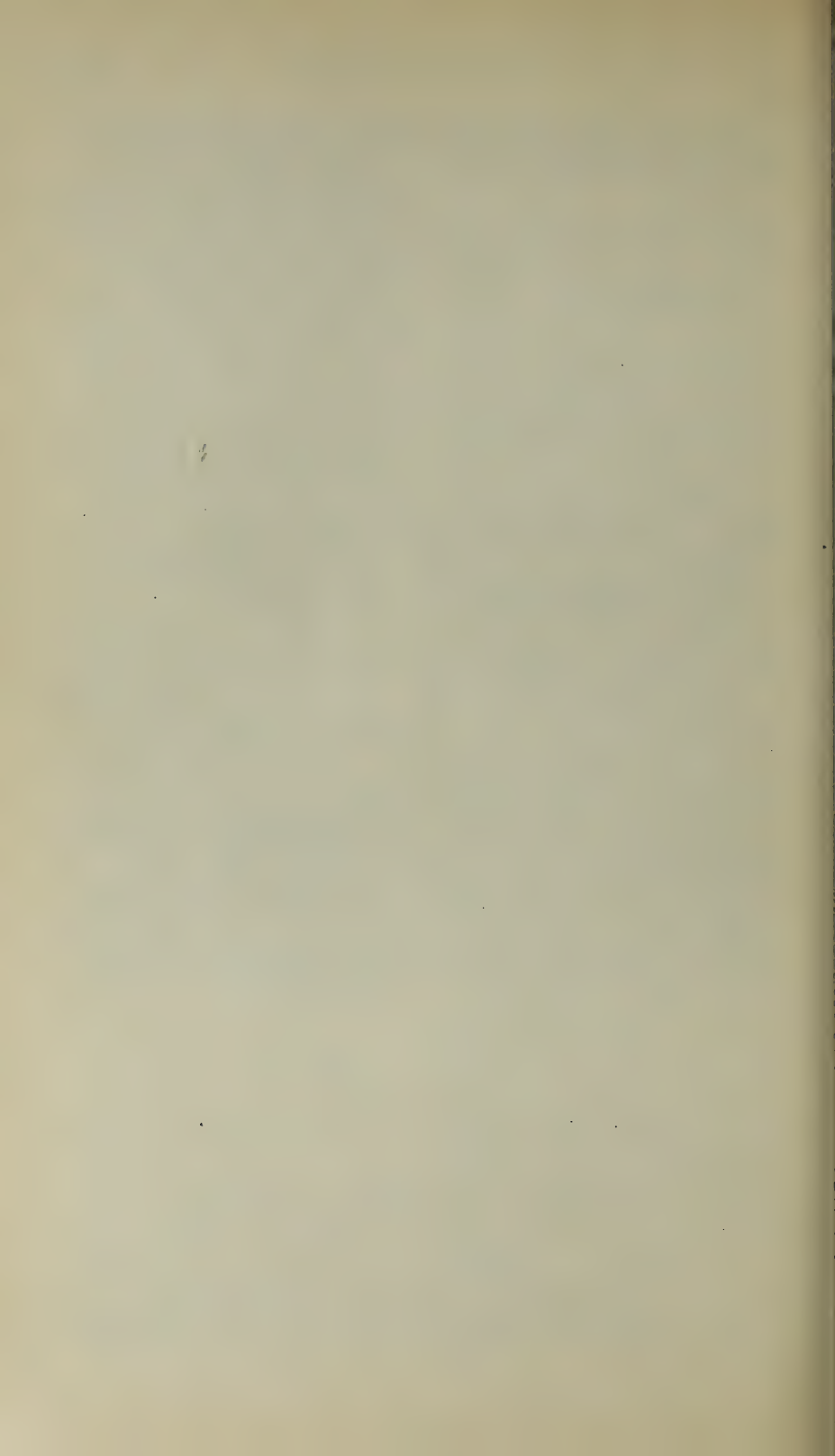


- Stains produced by antiseptic agents, 102.  
removal of by oxidation and reduction, 102.
- Standard of Skill, A Defective (editorial), 404.
- Stanton, C. W., "Dental Society of the State of New York—Its Past, Its Future," 284.
- Staphylococcus aureus and the streptococcus, general infection produced by, 527.
- Starch, digestion of, 1044.
- Starr, A. T., on protection for exposed pulps, 343, 344.
- Start right! 655.
- Status of the dental profession, F. Primrose on, 485.
- Status (The) of the Dentist in the Navy,—An Appeal to the Dental Profession, communication from Wms. Donnally on, 1277.
- Steel instruments, to reharden, 992.
- Steel, preparation of for regulating appliances, 82.  
proper way to band, 418.  
to anneal, 201.  
to prevent from rusting, 653.
- Steel pens, to keep from rusting, 653.
- Steel tubes better than those of glass for cement and amalgam experiments, 1151.
- Sticking stoppers, to prevent annoyance of, 81.
- Stiff, F. W., "Our Next Forward Movement: Teaching Dental Hygiene," 1039.
- Stigmata of degeneracy in relation to irregularities of the teeth, 530.
- Stimulant drugs, definition of, 855.
- Stockton, C. S., on filling children's teeth with gold, 1188.  
on pyorrhea alveolaris, 353.  
on the progress of the dental profession, 1182.
- Stomatitis gangræna (noma) a case of, 531.
- Styptics, powerful, why they should be avoided in pulp-canals, 1243.
- Subarachnoid injection of cocaine, 991.
- Submental sinus, a sequela of influenza, treated by root-filling, 528.
- Such is fame! 1094.
- Suction chambers, 994.
- Sudduth, W. X., on pyorrhea alveolaris, 827.
- Suggestion (A) in Dental Education (editorial), 1281.
- Suggestive therapeutics in the case of matter-of-fact individuals, 590.
- Sulcus of tooth the point most liable to be attacked by caries, 1159.
- Sulfuric acid, effect of upon the necks of teeth, 354.  
treatment of putrescent roots with, 991.
- Summa, Richard, on orthodontia, 946.
- Suppurative processes in mouth frequently first discovered by dentist, 931.
- Suprarenal capsules, use of extract of, particularly in dentistry, 1086.
- Surgical operations, frequent fatal ending of in pre-anesthetic days, 209.
- Suspicious growths or ulcers in the mouth, removal of for microscopical examination, 987.
- Swallowed bodies, removal of, 654.
- Swap, Franklin, obituary of, 1080.
- Swelling, sloughing, and necrosis after dental operations, how to avoid, 24.
- Swiss broaches used in preparing root-canals, method of drawing temper from, 84.
- Symmetrical extraction of the first permanent molars: is it a justifiable operation, 645.
- Syphilitic infection in the course of surgical operations, 1301.
- TAKAMINE, Jokichi, "A New Hemostatic," 1189.
- "Taking the Bite," 450.
- Talbot, E. S., on pyorrhea alveolaris, 827.
- Talbot, W. O., on a plan for determining by measurement, abnormalities in the development of the upper and lower jaws, 945.
- Taylor, Levi C., "Hygienic Fillings," 1245.  
on tooth-polishing, 511.
- Teaching hygiene, J. P. Corley on, 1035.  
F. W. Stiff on, 1039.
- Teague, B. H., on dental education, 726.
- Teeth, adaptability of women to cleaning, 840.  
and gums, treatment of by D. D. Smith's method, 836.  
and jaws, endless variety of, how produced, 10.  
as much care to be used in preparing them for amalgam as for gold fillings, 1188.  
bad, a cause of intemperance, 1301.  
bleaching of, J. S. Cassidy on, 749.  
bleaching of with pyrozone, 1178.  
chewing gum in the cleaning of, 1037.  
cleaning of in sleeping-cars, 655.  
color of derived from dentin, not from enamel, 841.  
decalcification of in a mixture of food-stuffs and saliva, 442.  
decayed below gum margin, restoration of with amalgam, 1239.  
decided value of polished surfaces of, 1020.  
demineralization of by foods lacking in lime salts, 505.  
deterioration of, a sign of degeneracy, 502.  
effect of eruptive diseases upon, 369.  
extraction of, guaiacol in, 784.  
forms of, indicate foods best suited to individual, 1169.  
how affected when force is applied for the separation of, 740.  
how to brush them, 1021, 1037.  
irregular development of in children accounted for by non-exercise of occlusive force in parents, 14.  
method of recording operations for filling in dental schools, 311.  
mutilation of among certain races, 420.  
of children, necessity of regulating misplaced, 162.  
of man prove him to be an omnivorous animal, 1168.  
painless extraction of, 1091.  
perfect in ancient times, 790.  
pitted, treatment of, 369.  
preservation of school-children's, 897.  
regulation of previous to insertion of bridges, 1055.  
result of careful cleaning of, 352.  
same treatment not adapted to those of children and grown persons, 1152.  
same thoughts on the discoloration and bleaching of, 1289.  
strong, whole wheat bread for the development of, 870.  
study of after death from a medico-legal standpoint, 1292.  
sulci and fossæ in, 368.  
surface markings upon, J. J. Madden on, 367.  
systematic care of, 352.  
value of to cleft-palate patients, 571.  
varieties of grooves of, 368.  
when should they be filled with gold? 159.
- Teeth, artificial, with large occlusal surfaces, 1045.  
cracking of during soldering process, 1055.  
mounting of upon anatomical articulator, 453.  
use of plain in preference to gum variety, 329.

- Temperament should be studied in the construction of artificial dentures, 1169.  
in the selection of teeth, 1300.  
orthodontia in relation to, 788.
- Temporary crown, how to make, 109, 144.
- Tennessee Dental Association, 664, 797, 975.
- Tenney, L. S., "Classroom Methods of Teaching," 705.
- Texas State Dental Association, 290.
- Thiesing, H., "Local Anesthesia and Its Application to Dentistry," review of, 773.
- Third dentition, a partial, 656.
- Third molar, difficult eruption of, 373.  
impacted, disturbances caused by, 1252.
- Thompson, Alton Howard, "A Study of Comparative Occlusion and Its Bearings upon Orthodontia," 950.  
"Ethnographic Odontography," 1184.
- Thornton, A. W., "The Care of Children's Teeth," 959.
- Three important "don'ts," 789.
- Thrush, treatment of by sucking-bag, 1210.
- Tileston, H. B., "Inlays—Gold and Porcelain," 811.
- Tin a suitable material for filling children's teeth, 161, 162.  
preservative action of in the mouth, 533.
- Tin and amalgam, filling of cavities with, 831.
- Tin filling sixty years old, 533.
- Tin foil, its manipulation and its value as a tooth-saving material, 990.
- "Tin-gold," an excellent material for filling teeth, 533.
- Tobacco smoke, action of upon certain mouth bacteria, 651.
- Tomes, Sir John, on the jaw of a child, 286.
- Tongue-sucking habit, 420, 657.
- Tonsils, nature of in adults, 577.
- Tooth, a famous, 300.  
of a newly born child, 893.  
preparation of for "jacket crown," 114.  
to be filled with gold must be clean, 200.
- Toothache, drops for, 532, 1297.  
from inflamed pulp, relief of, 299.  
local application for, 83.
- Tooth-bands, arguments for and against, 56.
- Tooth-bleaching, chemistry of, 196.
- Tooth-bridge, how to construct, 59.
- Tooth-degeneration, lack of exercise a factor in, 507.
- Tooth-displacement, due to strain, 12.
- Tooth-eruption, precocious, 532.
- Tooth-extraction, curious symptoms following, 89.
- Tooth-powder, formula for, 224.  
properties it should possess, 893.
- Tooth, porcelain, changing the shade of, 299.
- To the Dental Novitiate—Greeting (editorial), 1073.
- Toxins, systemic affects following absorption of, 6.  
vital resistance to, varies according to general condition of individual, 2.
- Tracy, W. D., on hygienic bridge-work, 1157.  
on the packing of gold, 48.
- Trichloroacetic acid, C. E. Drummond on, 458.  
preparation of, 458.  
properties of, 459.
- Tri-State Dental Meeting of the Ohio, Michigan, and Indiana Dental Associations, 54, 135, 748.
- Truman, James, on filling children's teeth with gold, 1186.
- Tube crowns, use of, 111, 140.
- Tubercular lesions, microbicidal action of chemical rays upon, 986.
- Tufts College Dental School, commencement of, 877.
- Tumor of the dental pulp without caries of the tooth, 1208.
- Turpentine as an anesthetic, 1092.  
in the treatment of hematuria and gingival hemorrhage, 82.
- Turner, W. J., on root-fillings and their relative value, 1162.
- UNDERCUTS, plaster impressions of mouth where teeth form undercuts; a new method, José Valderrama y Barrenechea on, 559.
- Underwood, Arthur S., "Aids to Dental Anatomy and Physiology," review of, 1077.
- Unerrupted molar, second, in a patient aged fifty-six, 1085.
- University of Buffalo, Dental Department, commencement of, 625.
- University of Illinois, School of Dentistry, commencement of, 634.
- University of Iowa, College of Dentistry, commencement of, 876.
- University of Maryland, Dental Department, commencement of, 628.
- University of Michigan, College of Dentistry, commencement of, 874.
- University of Omaha, Dental Department, commencement of, 633.
- University of Pennsylvania, Department of Dentistry, commencement of, 288, 766.
- University of Southern California, College of Dentistry, commencement of, 763.
- University of Tennessee, Dental Department, commencement of, 632.
- Upper dentures, essentials to success in making, 84.
- Upper incisors, cutting of approximal marginal ridges as a prophylactic measure, 162.
- Uremic stomatitis and its diagnosis, 1288.
- VACUUM chambers in artificial dentures of no special value, 528.  
to avoid the necessity of, 1298.
- Valderrama y Barrenechea, José, "Taking Plaster Impressions of Mouths in Which the Teeth Form Undercuts. A New Method, Securing Governance of Fracture," 559.
- Van Antwerp, Wm., on pulp-digestion, 852.
- Vance, W. W., "How I Apply Some Theories of Cavity Preparation," 266.
- Vanderbilt University, Dental Department, commencement of, 876.
- Van Duzee, C. A., "The Shock of Dental Operations," 690.
- Vann, George S., "Apathy in the Dental Profession," 843.
- Van Woert, E. T., on X rays in dentistry, 345, 1260.
- Varnish for plaster models, 893.
- Vaseline, colored, injections of in surgical prosthesis, 83.
- Vermont Board of Dental Examiners, 666, 798, 999.
- Vermont State Dental Society meeting of, 194, 291.
- Vesication by means of chloral hydrate, 653.
- Vicentini, F., "Further Remarks on Lep-tothrix Racemosa According to Mr. Kenneth Goadby, of London," 673.
- Vignes, C. V., on some considerations in modern bridge-work, 66.
- Virginia State Board of Dental Examiners, 397.
- Virginia State Dental Association, 665, 798, 898.
- Vital resistance to micro-organisms, 335.  
"Vitalized air," 972.
- Volck, A. J., on porcelain work, 1176.
- Vomiting after administration of chloroform, prevention of, 84.
- Vulcanite dentures, broken, how to adjust, 340.

- Vulcanite plate, broken, to wax together, 203.  
 Vulcanization of large prosthetic pieces, 81.  
 Vulcanized rubber ear, a, 534.  
 Vulcanizing on plaster models, 415.  
 Vulnerable point in approximal anterior fillings, 189.
- WALKER, W. E., "A Partial Review of the Current Literature on Orthodontia," 950.  
 on combination fillings of cohesive and non-cohesive gold, 154.  
 on filling upper bicuspid and molars, 162.  
 report of committee on orthodontia, N. D. A., So. Br., 943.
- Wallace, J. Sims, on the diminution in size of the human jaw, 95.
- Warts on the hands sometimes caused by prolonged contact with iodine, 788.
- Washington State Dental Society, 399.
- Wassall, J. W., on the method of using the tooth-brush, 955.
- Waters, T. S., fitting of an Evans' seamless crown, 1178.  
 on bleaching teeth with pyrozone, 1178.
- Wax, how to remove from investments, 139.
- Weaver, W. H., on dental education, 727.
- Webster, A. E., on extraction in tooth-regulating, 286.  
 "Comparative Value of Ordinary Sealings for Root-Canal Dressing as Excluders of Bacteria," 925, 1151, 1162.
- Wedelstaedt, E. K., "An Answer to Dr. Hofheinz," 1232.  
 on "extension for prevention," 1232.
- Weisse, Faneuil D., "International Anatomical Dental Nomenclature, with Symbols to be Used in Formulæ," 115.
- Weiser and Zsigmondy, Drs., report of on dental education, 126.
- Welch, Geo. B., on filling with Watt's annealed crystal gold, 1178.
- Western Dental College, commencement of, 764.
- Western Reserve University, Dental Department, commencement of, 874.
- West Virginia State Board of Dental Examiners, 396, 899.
- Wetherbee, Isaac Josiah, obituary of, 880.  
 memorial resolutions on, 983.
- Wheat, nutritional value of the outer layer, 512.  
 bread, whole, for development of strong teeth, 870.
- White, Gordon, on the interproximal space, 165.  
 on root-amputation, 385.
- Whiteis, W. R., "Adenoids," 574.
- Why This Attack? (correspondence), 341.
- Wiksell, Gustave P., on science as a teacher of prophylaxis, 510.  
 on pyorrhea alveolaris, 361.  
 "Hammer and Nails," 867.
- Wilcox, A. A., "Dental Cements and the Cause of Their Failure as Filling Materials," 1058.
- Wilkinson, J. E., on the inspection of public school children's teeth, 960.
- Williams, R. O., "Little Things," 587.
- Willmott, J. B., on amalgam, 366.  
 on care of children's teeth, 961.  
 on cements, 1060.
- Wilson, Geo. H., "The Teaching of Prosthetic Dentistry," 709.
- Wisconsin State Dental Society, 664, 797, 975.
- "Worm" theory of caries among Chinese dentists, 421.
- Wounds in the mouth, healing of, 895.  
 powder for dusting, 478.
- Wright, Cyrus M., "Septic Gingival Caries: Disease of the Gum Borders and Sockets of the Teeth," 119.
- X-RAY burns, prevention of, 1296.  
 Prof. Kaposi on, 1266.
- X rays, Bieder on, 1266.  
 for locating unerupted teeth, 157.  
 in dentistry, F. T. Van Woert on, 1260.  
 microbicidal properties of, 1265.  
 technique of application, 1269.  
 to relieve pain, 1269.
- Young blood, introduction of into dental societies, 940.
- Young, J. L., "Modern Crown- and Bridge-Work," 1062.  
 "Some Considerations in Modern Bridge-Work," 54, 69.
- Young, H. Newton, on local anesthesia, 51.
- Young, R. C., "Asepsis," 686.  
 on dental education, 727.
- ZINC, proper temperature at which to pour, 533.
- Zinc arsenite in cements, 1026.
- Zinc dies of models with deep undercuts, a simple way to make, 1081.
- Zinc oxid in dental therapeutics, 650.
- Zinc oxychlorid, addition of calcium to hasten setting of, 1028.
- Zinc oxyphosphates, chemical definition of, 1025.
- Zinc phosphate sometimes better than gutta-percha for a temporary filling, 159.  
 use of in cervico-occlusal cavities, 681.
- Zsigmondy and Weiser, Drs., report on dental education, 126.





THE S. S. WHITE DENTAL MFG. CO.

*Please send me the Dental Cosmos for 1903, for which*

*find inclosed.....*

*Name.....*

*Street No.....*

*Post Office.....*


*County.....*

*State.....*





# The Business Side of Dentistry

HAT dentistry has a purely business side will be made painfully evident to the man who attempts to practice the art without paying due attention to the collection of his bills. This is a purely business matter, of vital importance to the success of the practice. It involves the keeping of accurate records of the work done for the various patients, the systematic forwarding of bills for the services rendered, the collection and crediting of the payments.

We have a line of stationery for the keeping of dentists' accounts with their patients, including the Card System, Ledgers and Appointment Books, Bill-heads, etc. Examples of these are shown in pages following. The full line is described and priced in our Catalogue of Books, which is sent free for the asking.

... THE ...

## **Warren Improved Dental Ledger No. 1.**

In the Warren Ledger each of the usual dental operations is given a separate column. The diagram is reckoned the simplest and most complete before the profession.

The method of keeping an account (demonstrated on the opposite page) is to number the operation consecutively, placing the same number on the tooth treated, then the date, number, and amount, with a check mark under the heading which designates the operation.

308 pages, each 10 x 15 inches, 88 of which have three diagrams each, 132 having two, and 88 having one each, thus affording opportunity for long, medium, and short accounts.

Bound in red leather, red cloth sides, with red edges. Ample Index.

Price ..... \$3.60

We can supply Warren Dental Ledgers made to suit special needs on order. Thus, if one wishes to have a book composed entirely of one account or two accounts or three accounts to the page, or omitting any one of the sizes, we will be glad to quote special prices.

## **Warren Improved Dental Ledger No. 2 (Square Form).**

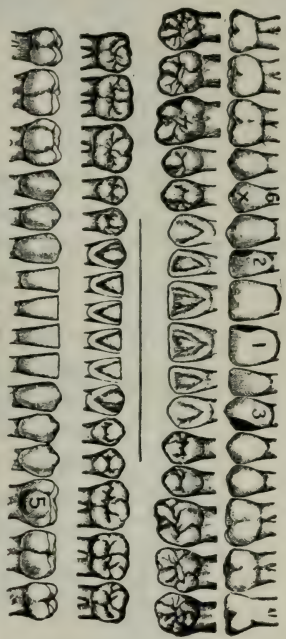
The No. 2 Warren Improved Dental Ledger has pages about two-thirds the length of the well-known form. The book is thus about 10½ inches square. There are two sizes of accounts, two to the page and one to the page, and these are distributed throughout the book, first eight of the one-account pages, then eight of the two-account and so on, with an extra eight of the two-account pages at the end. There are 312 pages in the book, giving 320 short accounts and 152 long ones, a total of 472. The short accounts contain seven lines beside the diagram, spaces for name and address, etc.

Bound in red leather, red cloth sides with red edges. Ample Index.

The diagram used in these Ledgers is universally conceded to be the best ever offered to the dental profession, as it shows every surface of each tooth equally well.

Price ..... \$2.50

# The Warren Improved Dental Ledger



Mr. John Doe

1769 Carey St.

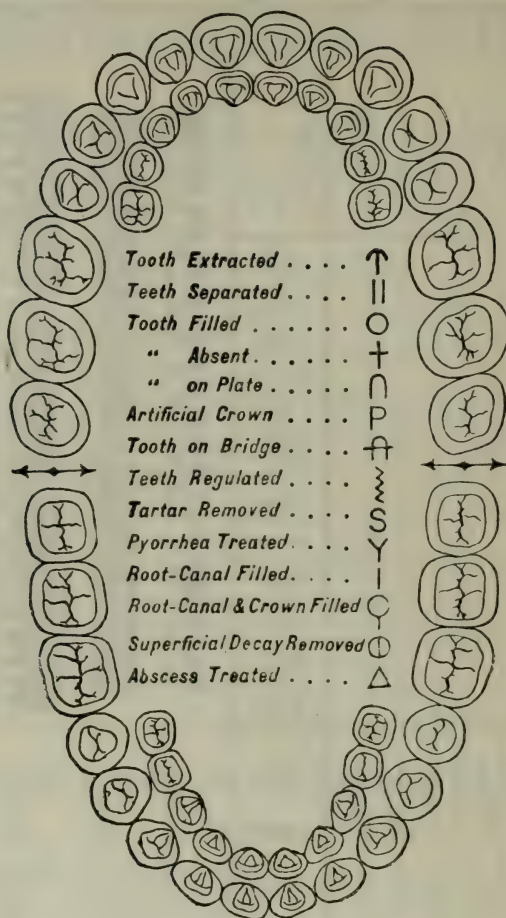
Recommended by Mr. Richard Roe.

1895														No.	Gold Filling.	Amalgam Filling.	Phos. Zinc Filling.	Gutta Percha Filling.	Tin Filling.	Artificial Crown.	Bridge.	Treatment.	Cleaning Teeth.	Extraction.	Artificial Denture.	Time Reserved.	Dr.	Cr.	MEMORANDA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
Feb.	20	1	✓											7 50																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									

Dingram about two-thirds actual size.



# Allport's Improved Registering Dental Ledger



It is just forty years ago (December, 1862) since "Allport's Dental Ledger" was first advertised in the DENTAL COSMOS. That it is still probably more extensively used than any other dentists' account book is very good evidence of the vitality of the idea underlying it,—a diagram to indicate the location of the operation, a symbol to describe its character. Of course, the diagram has been improved, and from time to time, as advances in dental practice demonstrated the need, changes and additions to the symbols have been made, but the idea is the same now as always. The improvements have been merely expansions or adaptations of the original plan. It covers the needs of any form of practice, and affords a simple, easily kept, accurate record.

Two accounts to the page, each with diagram as shown, with place for name, reference, date of operation, charges, and credit for amounts paid.

Good paper, substantially bound, with ample index. In stock regularly as priced below.

Larger books (more pages) made to order at moderate prices.

## PRICES.

340	Pages, Half Turkey, Cloth Sides.....	\$3.50
340	" " Roan, Paper .....	3.00
172	" " " " " .....	2.00

# Dental Appointment Book No. 3

An Appointment Book with the unequalled Allan diagram, more especially for those who use the Warren Dental Ledger.

The book is oblong; the pages, of which there are 312, are  $5\frac{1}{4} \times 9$  inches. The diagram is printed in red (natural size), so that marks upon it will be more readily seen. Below the diagram are the spaces for appointments from 8 A.M. to 5 P.M., with headings for all the usual operations, and memorandum space for any special notes. The reduced reproduction of a page herewith gives a clear idea of the advantages of this book.

Printed on good paper, paged and indexed, bound in cloth, with leather back; red edges.

Price... \$1.25

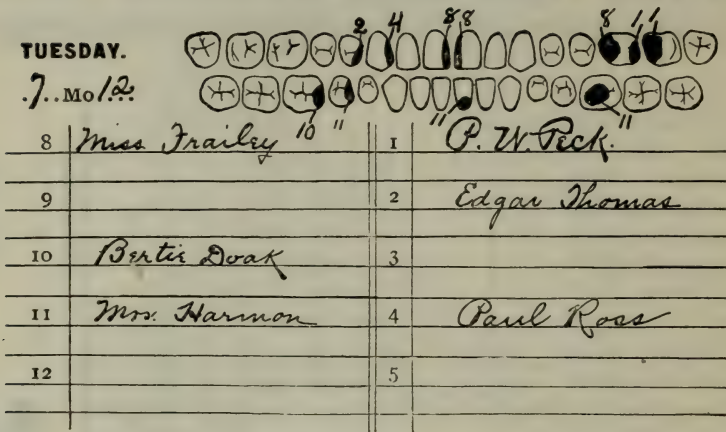
NAME		Hour.	No.	Gold Filling.	Amalgam Filling.	Phos. Zinc Filling.	Gutta Percha Filling.	Tin Filling.	Artificial Crown.	Bridge.	Treatment.	Cleaning Teeth.	Extraction.	Artificial Denture.	Time Reserved.	Dr.	Ct.	MEMORANDA
		8																
		9																
		10																
		11																
		12																
		1																
		2																
		3																
		4																
		5																

APPOINTMENTS.

SATURDAY



# The Diagram Appointment Book



The feature of this Appointment Book is the facility which it affords of making a brief but clear memorandum of the work to be done for each patient at the time the appointment is made.

For each day there is a diagram of the teeth. As appointments are made, the hour set apart is noted upon the diagram, opposite the tooth or teeth to be treated. When the patient takes his place in the chair, a glance at the diagram shows the operator at once where the work is to begin.

The illustration shows a typical day's markings.

The book is 6¾ x 4¼ inches. In the front are calendars for three years, and a table showing the number of days from any day in one month to the same day in any other month; following this are the appointment pages, a full week's appointments being shown when the book is opened. Back of this are pages for memoranda and blanks for a monthly cash account and yearly summary. Supplied in cloth or leather.

## PRICES.

Cloth .....	\$0.30
Leather .....	.50



# Dentists' Pocket Diary and Appointment Book

FOR

REGISTERING APPOINTMENTS FOR DENTAL OPERATIONS

MONDAY				19
8		1		
9		2		
10		3		
11		4		
12		5		

TUESDAY				19
8		1		
9		2		
10		3		
11		4		
12		5		

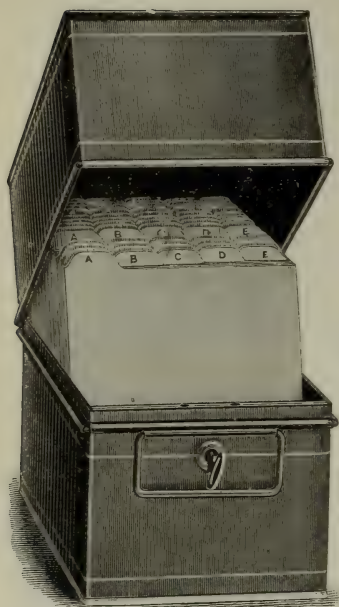
WEDNESDAY				19
8		1		
9		2		
10		3		
11		4		
12		5		

The Diagram shows the exact size and style of a page of the Pocket Diary, presenting, when open, engagements for one week. The figures denote the hour of the engagement. It contains blanks for 54 weeks, and, being without date, is good for any time. It has also a neat Memorandum attached. One of the oldest and most popular forms.

Price, Flexible Cover, Gilt Edge.....\$0.55  
 " " " " " with Pocket and Tuck..... .80

# Card System of Keeping Accounts

After samples of S. H. GUILFORD, A.M., D.D.S.



Actual size of Tin Case Outfit No. 1  
5 in. wide, 8½ in. long, 7½ in. high.

This adaptation of the Card Index System to the use of the dentist takes the place of the Ledger, Cash-book, and Bill-book, all of these accounts being kept on separate cards in the same box under suitable headings. The system is simplicity itself, and requires only a brief study for its mastery.

The outfit includes three sets of Guide Cards (each set of a different color), white Record Cards, with diagram, blue cards ruled to serve as either Cash or Bill Cards, and Examination Blanks. They are arranged in the box in the order mentioned, the Guide Cards—Buff, for work in progress, Salmon, for work completed, Blue, for accounts settled—being in front.

The system has the following important advantages:

- First. The handling of cumbersome books is done away with.
- Second. Cards of such patients as die or remove are thrown away and no dead accounts are carried.
- Third. Ease of entering items; each card being taken out, item recorded, and then returned to its proper place.
- Fourth. Facility in making out bills. All Record Cards between the salmon guides, and only those, call for the making of bills, the work having been completed.
- Fifth. New accounts can be introduced and old ones discarded without disturbing the system.
- Sixth. Besides its convenience and systematic method, the cost of using the card system is much less than the old one of buying new books from time to time.

The outfit consists of 300 Record Cards, 15 Cash or Bill Cards, with three sets of Guides and one pad of 100 Examination Blanks, in a japanned tin case (see illustration) fitted with lock and key.

Price, Outfit No. 1, complete..... \$5.00

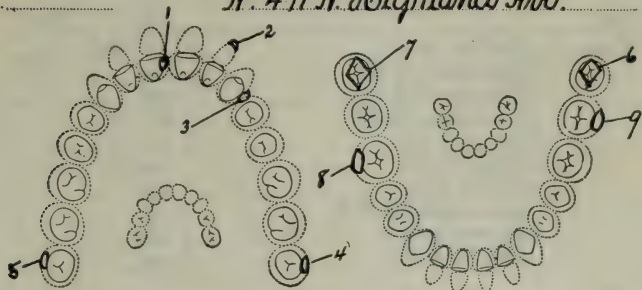
# Card System of Keeping Accounts

## RECORD CARD

Mr. J. H. Robertson

b.283

Nº 471 N. Highland Ave.



SUGGESTED BY S. H. GUILFORD, A. M., D. D. S.

[illegible]

THE S. S. WHITE DENTAL MFG. CO

Z-47

### Reduced Illustration of Record Card Showing Transactions.

The Record Card represents what would be an account in a ledger; the illustration (reduced) shows a closed account. When this account was first opened it was placed behind a Buff Guide in the front of the Tin Case; and when the work was completed the card was then placed behind the corresponding letter in the second Guide (Salmon). It remained there until the last payment which closed the account, when it was removed to the third Guide (Blue). This system keeps all accounts in their respective classes, thus enabling the busy dentist at all times to be able to instantly find any account he may desire; besides this, when sending out his bills, he has only to look at the cards behind the salmon guides, for these represent the accounts he can reasonably expect to be settled. No time is thus wasted in looking at accounts either closed or where the work is not completed. The cards are 5 x 7 inches, and are of a fine quality of Bristol board.

Price, Record Cards.....	per hundred	\$0.75
--------------------------	-------------	--------

We will supply the Guides for these cards in either color

(Buff, Salmon, or Blue) at per set of one color..... .50

Three sets (one of each color), complete..... 1.50



# Card System of Keeping Accounts

## CASH OR BILL CARDS

Cash

1901			REC'D	PAID
Jan	3	Archer G. J.	18 50	
"	"	Davidson G. H.	33	
"	"	Barker P. R.	39	
"	"	Franklin H. H.	29 50	
"	"	Benson H.	22 50	
"	5	Clayton R.	74 50	
"	"	Albert J. J.	29	
"	"	Cummingham A. B.	49	
"	"	Dupont G. R.	63	
"	6	DuPont V. C.	92	

Bills

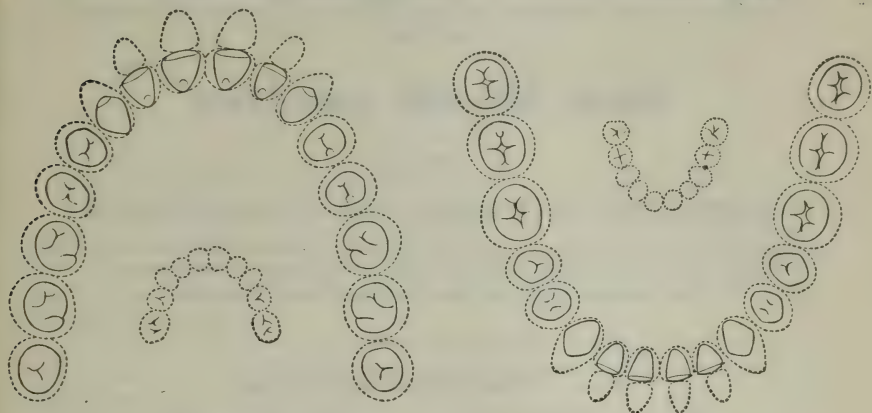
1901			<del>REC'D</del>	<del>PAID</del>
Jan	1	Albert J. J.	29	
"	1	Archer G. J.	18 50	
"	1	Bergelius John O.	63	
"	1	Barker P. R.	39	
"	1	Benson H.	22 50	
"	1	Clayton R.	74 50	
"	1	Cummingham A. B.	49	
"	1	Davidson G. H.	33	
"	1	Dupont G. R.	63	
"	1	Franklin H. H.	29 50	

These Cards are 5 x 7 inches Blue Bristol board, and are so printed that they can be adapted either as Cash or Bill Cards. These cards act as a check so that errors of credit are almost impossible. When bills are sent out they are entered on the Bill Card, and when the money is received the amount is entered on the Cash Card. If it is in full for the amount of the bill, the same is crossed out on the Bill Card, and the cash received credited to the patient's account on the White Record Card. Thus you have at all times at a glance the knowledge of those who have failed to pay their bills and also a check in case failure was made to properly credit the money received.

These cards are sold in packages of 25 at \$0.25 per package.

# Card System of Keeping Accounts

EXAMINATION BLANK, No. 4



SUGGESTED BY S. H. GUILFORD, A. M., D. D. S.

THE S. S. WHITE DENTAL MFG. CO.

2-49

The illustration shows the exact size of our Examination Blank No. 4, used with our Card System of Keeping Accounts. It is meeting with favor on account of the excellence of the diagram.

In Pads of 100 .....per pad \$0.20

## INTERSTITIAL GINGIVITIS Or So-Called Pyorrhoea Alveolaris

By EUGENE S. TALBOT, M.D., D.D.S.

Professor of Dental and Oral Surgery, Northwestern University Woman's Medical School, Honorary President of the Dental Section of the Tenth International Medical Congress, Berlin, 1890; Honorary President of the Dental Section of the Twelfth International Medical Congress, Moscow, 1897, etc.

WITH SEVENTY-THREE ILLUSTRATIONS

This book, while not an imposing volume in size, covers its subject. A well-known teacher says of it, "It is the best book Dr. Talbot has written, and the most scientific presentation of the subject I have ever seen."

It gives the principal views of the disease which have found following among dentists, but the work itself is based on original research, conducted during the past four years in seven different Chemical and Pathologic Laboratories, by different observers of admitted skill in Pathology, Bacteriology, and Chemistry. This wide-reaching preliminary research was undertaken on this scale to eliminate the usual serious elements of personal error. The author's conclusions are thus reinforced by a mass of evidence of a character difficult to controvert.

The book is handsomely printed, in large clear type, and the illustrations are finely executed half-tones.

Price, Large Octavo ..... \$3.50 net.

**NOW READY**

A MANUAL  
OF THE  
**Injuries and Surgical Diseases**  
OF THE  
**Face, Mouth, and Jaws**

BY

**JOHN SAYRE MARSHALL, M.D. (Syracuse University)**

Former Professor of Dental Pathology and Oral Surgery and Emeritus Professor of Oral Surgery of the Dental Department of Northwestern University, etc.; President of the Examining Board for Dental Surgeons, United States Army.

---

**Second Edition, Revised and Enlarged**

Octavo. Pp. 732

Illustrations, 390

---

The second edition has been enlarged by the addition of some eighty-odd pages of matter and twenty-six illustrations, besides numerous interpolations and changes throughout the old text. The book itself is no larger than the first edition, space for the new matter having been gained by omitting the review questions.

The volume as now presented is invaluable to the student. More and more the field of the dentist is widening, and oral surgery is an obvious extension, a fact recognized by the greater attention paid to this branch of the dental curriculum of later years. Operations on the mouth and jaws are naturally within the province of the dentist, who is through his training and his daily duties more familiar with this region than the general surgeon can be.

As the recognized text-book on oral surgery, Marshall's "Injuries and Surgical Diseases" has had a large influence in the training of dental students. The new edition will fill the needs of students even more completely. Dental practitioners also will find it a reference book of great value in the diagnosis of obscure cases. Its pathology is one of its most important features.

Price.....cloth \$5.50 net.  
".....sheep 6.50 "



# ORTHODONTIA

## Mal-Position of the Human Teeth Its Prevention and Remedy

By **S. H. GUILFORD, A.M., D.D.S., Ph.D.**

Professor of Operative and Prosthetic Dentistry in the Philadelphia Dental College;  
Author of "Nitrous Oxide," etc.

### Third Edition, Thoroughly Revised

Professor Guilford's book on "Orthodontia" was originally written at the request of the National Association of Dental Faculties, in order that there might be a standard text-book on the subject. Professor Guilford was chosen to write it because of his known fitness, his extensive experience, and his ripe knowledge. The two editions which have preceded this have well fulfilled their mission.

The new edition has been thoroughly revised, and in every way it has been brought abreast with the most recent advances in the department of dental effort of which it treats.

Sent by mail on receipt of price.

Price, Cloth .....\$2.25 net.

## Descriptive Anatomy of the Human Teeth

By **G. V. BLACK, M.D., D.D.S.**

**Fourth Edition. Octavo. Pp. 162. Illustrations 142.**

The object of this volume is to afford to students and dentists the opportunity to become thoroughly grounded in the macroscopic anatomy of normal human teeth. While doubtless dentists generally know the forms of the individual teeth well, it may be questioned if many, outside of those who are familiar with the teachings of this book, have a real, definite knowledge of the significance of the various forms. Dr. Black's effort in preparing this volume was to so systematize the subject and its nomenclature that references to this or that portion of a tooth should convey a definite idea to those to whom it was addressed. In other words, he aimed to clarify the subject so that descriptions in a paper or a discussion by one dentist should be clearly understood by others who read it. That he succeeded the fact that so few changes have been found necessary in the editions which have succeeded the first is eloquent testimony.

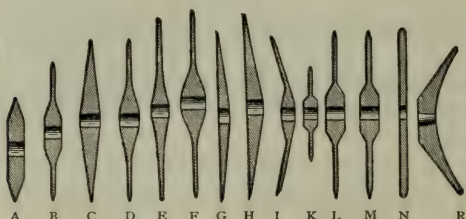
Black's "Anatomy" should be in the hands of every student and practitioner of dentistry.

Price .....\$2.50 net.

# Gem Disks, Points, Wheels and Cups

The Gem appliances have this advantage: they cut equally well whether run wet or dry, and stand the strain equally well. They will not melt down under the heat generated by the hardest laboratory operation, and they are uniform in cutting quality throughout,—have no soft spots. They cut rapidly and they last.

## GEM DISKS

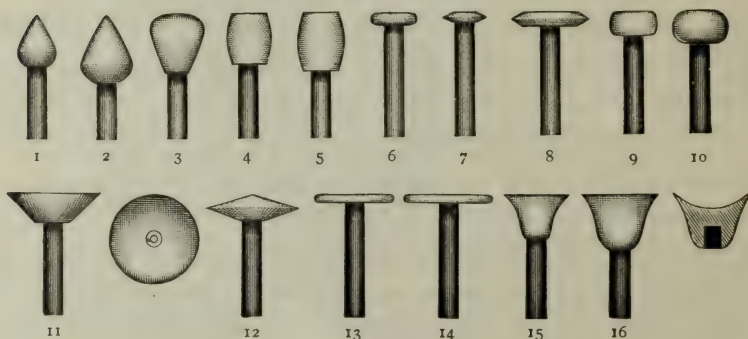


Can be used on Mandrels Nos. 302, 303, 304, 313, and 319 A. Unmounted, put up singly in envelopes; mounted, singly in boxes.

### PRICES

A to N, and R, not mounted.....	each	\$0.07; per doz.	\$0.75
“ “ “ “ “ mounted .....	“	.15; “	1.75

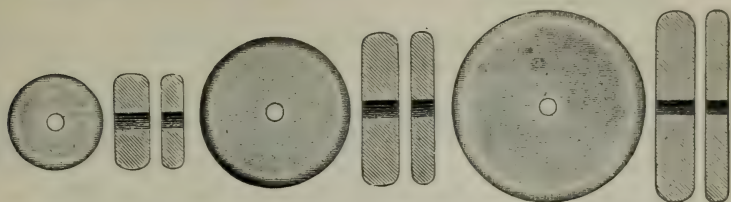
## GEM POINTS



### PRICES

Nos. 1 to 16, not mounted .....	each	\$0.04; per doz.	\$0.40
“ “ “ “ “ mounted .....	“	.12; “	1.40

# GEM STUMP WHEELS



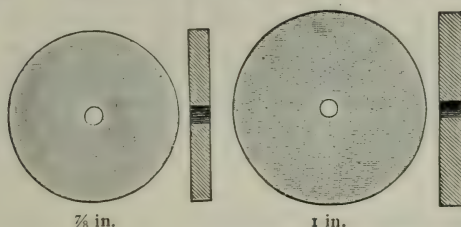
For the preparation of roots for pivoting, and for cutting off projections of natural teeth. Three sizes:  $\frac{1}{2}$  inch,  $\frac{3}{4}$  inch, and 1 inch in diameter; the thicknesses are shown in the sectional illustrations.

Unmounted, put up singly in envelopes. Mounted, singly in boxes.

## PRICES.

	Each.	Per doz.
Unmounted .....	\$0.07	\$0.75
Mounted .....	.15	1.75

# GEM CROWN WHEELS



$\frac{7}{8}$  in.

1 in.

These Wheels are rapid cutters, much more so than corundum, with the added advantage that they can be used wet or dry. Do not use shellac for mounting these wheels, but oxyphosphate or an oxychlorid.

Two sizes,  $\frac{7}{8}$ -inch and 1-inch diameter.

Price, either size.....	each	\$0.07
“ “ “ .....	per doz.	.75

# GEM CUP

PRICE {	Not mounted .....	per doz	\$0.40
	Mounted .....	“	1.40



Gem Disks and Wheels to be genuine should be under our unbroken label.

In mounting Gem Disks, Points, or Cups, on Plain Mandrels, use oxyphosphate or an oxychlorid. Shellac is not suited to the purpose.

In ordering Engine Instruments, always specify Hand-piece for which they are desired.



# "REVELATION" EXCAVATING BURS.

Registered July 13, 1887.

## The Essentials of Excavating.

In the excavation of a cavity in a tooth the dentist has three things, among others, on his mind:

*How best to get the right size and shape of cavity.* The success of the operation depends largely on the perfection of the cavity-formation.

*How to excavate it quickly and skillfully.* Time is money, and quick, skillful work counts.

*How to save the patient from unnecessary pain.* The less pain the patient has to bear, the greater his satisfaction and the less the wear on the dentist's nerves.

## How to Assure Them.

Practically all the excavation of cavities in these days is done with the engine "bur." The choice of means resolves itself into the selection of "burs." When you have arrived at that point, there is but one "Bur" to consider—the "Revelation." We prefer to call it an engine excavator, because it doesn't "bur,"—it cuts the dentin away in a clean shaving,—doesn't grind or "chaw" or "bur" as the ordinary bur does, or as a buhr stone does. Use "Revelation" Burs and you will readily get the right shape and size of cavity, you will excavate it quickly and leave the cavity in good shape, and you will do it with the least pain to the patient.

## The Revelation Bur in a Nutshell.

Every cutting edge is made at an angle of  $51^{\circ}$ , which is just right for cutting dentin.

Every edge is razor sharp and every one of just the same height.

The microscope will show no flaw or roughness; every surface is smooth to provide for clearance.

They cut as well endwise as sidewise; no drill is needed to open up the cavity.

They clear perfectly; do not jam or heat up.

They cut faster and easier than any other burs and last longer.

They are labor-savers, time-savers, pain-savers, money-savers.

## For the Patient's Sake.

On this exhibit there is no question as to the superiority of the "Revelation" Bur. It cuts, sure. For this reason a new "Revelation" Bur, run fast, is the best and surest obtundent known to-day. Try it once on a patient you know is afflicted with sensitive dentin,—that is, if you have been using other burs, or even a dull "Revelation,"—just try once the effect of a new, sharp "Revelation" Bur, run it fast, when you reach the sensitive zone, and see if your patient does not rise up and call you blessed.

Trade-Mark

# "REVELATION" EXCAVATING BURS.

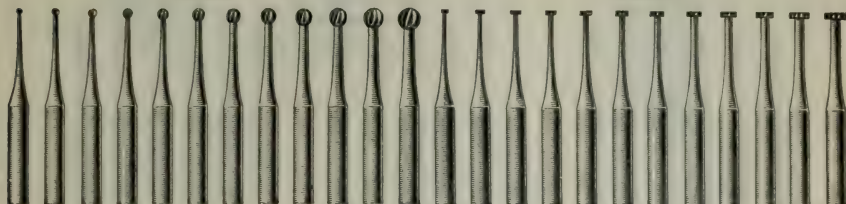
Registered July 13, 1897.

Patent Reissue Oct. 28, 1890. In England, Nov. 14, 1887.



Round.

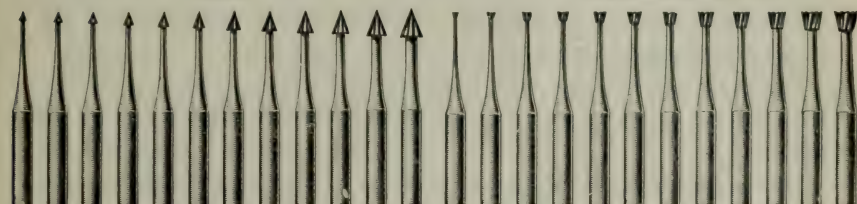
Wheel.



1/2 1 2 3 4 5 6 7 8 9 10 11 11 1/2 12 13 14 15 16 17 18 19 20 21 22

Cone.

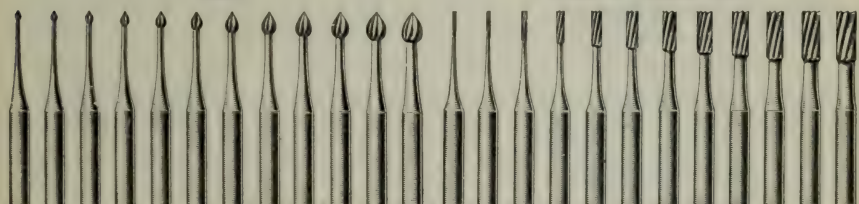
Inverted Cone.



22 1/2 23 24 25 26 27 28 29 30 31 32 33 33 1/2 34 35 36 37 38 39 40 41 42 43 44

Bud.

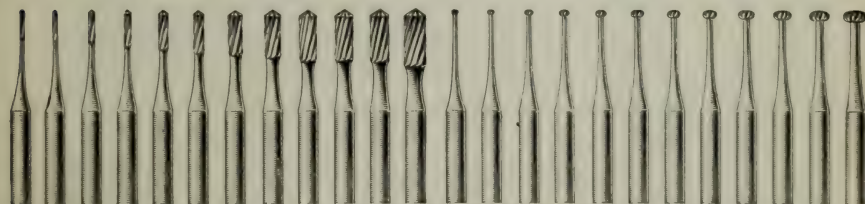
Fissure, Square End.



41 1/2 45 46 47 48 49 50 51 52 53 54 55 55 1/2 56 57 58 59 60 61 62 63 64 65 66

Fissure, Pointed.

Oval.



66 1/2 67 68 69 70 71 72 73 74 75 76 77 77 1/2 89 90 91 92 93 94 95 96 97 98 99

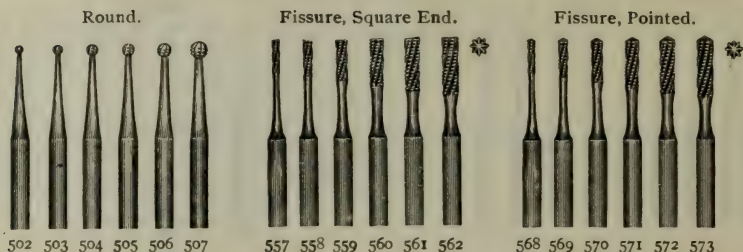
For prices, see page 18.

[xcvi]

Trade-Mark  
**"REVELATION" ROUND AND FISSURE**  
Registered July 13, 1897.  
**DENTATE BURS.**

UNEQUALED FOR CUTTING ENAMEL.

Patent Reissue Oct. 28, 1890. In England Nov. 14, 1887.



Dentate Burs are for the special purpose of cutting enamel. Instead of presenting a smooth cutting-edge as in the regular "Revelation," the blades are cut into tooth forms.

These sharp, tooth-like points break up the hardest enamel, and without the danger of breaking too much, as is the case when Enamel Chisels are used.

They solve the problem of enamel-cutting with the engine as effectually as do the ordinary forms that of dentin.

PRICES OF "REVELATION" BURS.

Nos.	1/2 to 7	Round	.....	} Dozen, \$1.50 1/2 Gross, 7.50
"	11 1/2	" 18	Wheel	
"	22 1/2	" 29	Cone	
"	33 1/2	" 40	Inverted Cone	
"	44 1/2	" 51	Bud	
"	55 1/2	" 62	Square Fissure	
"	66 1/2	" 73	Pointed "	
"	88 1/2	" 95	Oval	} Dozen, 2.00 1/2 Gross, 10.50
"	8	" 11	Round	
"	19	" 22	Wheel	
"	30	" 33	Cone	
"	41	" 44	Inverted Cone	
"	52	" 55	Bud	
"	63	" 66	Square Fissure	
"	74	" 77	Pointed	} Dozen, 2.00 1/2 Gross, 10.50
"	96	" 99	Oval	

DENTATE.

"	502	" 507	Round	.....	} Dozen, 2.00 1/2 Gross, 10.50
"	557	" 562	Square End Fissure	.....	
"	568	" 573	Pointed Fissure	.....	



# Outfit for Cutting Cavities in Porcelain Teeth



Actual size.



This inexpensive outfit makes the dentist independent in the matter of cutting cavities in porcelain teeth. With it he can cut the cavities just as he wants them, with the certainty that his ideas will be carried out. The outfit consists of a jar of Carborine and three instruments for its application to the tooth to be cut.

**Carborine** is the trade-name which we have given to a paste-like preparation of Glycerol loaded with pulverized Carborundum. The great cutting or abrading power of Carborundum is well known. The mixture with Glycerol merely affords a convenient, economical form for its application. It is a reliable, effective cutter of even so difficult a substance as porcelain.

**The Instruments** are small disks of soft steel mounted on engine-bit shanks. The disks are rather thick in proportion to their diameters, and are three in number. The pasty character of the Carborine causes it to adhere to them, affording a practical, rapid means for cutting cavities of any desired shape. The disks work equally well on face or edge. By using the face a round cavity can be bored right into the porcelain, and thereafter enlarged or modified in form as desired by cutting with the edge; or by using the edge a smaller or irregular-shaped cavity can be made. The instruments are made for No. 6, No. 7, or No. 8, or universal Hand-pieces.

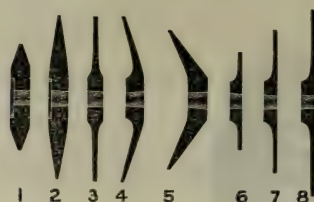
We believe this Outfit will simplify the placing of fillings in porcelain teeth in that it will place the entire operation within the individual control of the dentist. It will make him master of the situation.

Price, Complete Outfit, as illustrated .....	\$0.50
“ Carborine, separately .....	.20
“ Instruments, “ .....	each .10

Directions for use printed on the label of the box.

**In ordering Engine Instruments, always specify Hand-piece for which they are desired.**

# VULCARBO DISKS



These Disks are made of selected Carborundum thoroughly incorporated in rubber in the soft state and then molded and vulcanized.

Those who are familiar with our well-known Rubber and Corundum Disks will recognize that in this new combination we have a stiff, durable disk, which affords an unequaled opportunity for the exercise of the abrasive power of carborundum. The new Disk has one considerable advantage over the ordinary Carborundum disk: it has no soft spots. The thorough intermixing of the powder with the rubber and the subsequent vulcanization assure a product which is uniform in texture throughout.

The vulcanized carborundum (Vulcarbo) disks will not break under any fair conditions of use, and they will cut keenly until worn so small that there is no longer any usable surface. We are thoroughly convinced of their superiority in every respect.

In offering them we institute another reform. In the old line there were sixteen disks. Several of the forms and sizes were nearly like others,—did not afford sufficient differences in practical utility to justify their continuance. We avoid this useless multiplication of forms by making only eight of the new line. These eight contain every useful variation in size and shape, some being exact duplicates, others modifications or combinations, others still, new forms. Every one of them will be found to have its distinct place in dressing down fillings and separating teeth, and collectively they will be found to meet every need for disks in this work.

The grit of Carborundum used is a medium.

Adapted for use with Mandrels Nos. 303 and 321. Nos. 1 and 2 have recessed centers so that the heads of the mandrels are within the disks when mounted. The others are too thin to admit of this.

Price .....each \$0.05



## RUBBER BIB (HORTON'S).

Where there is a copious flow of saliva a bib becomes a necessity to the patient. The Horton Bib is so shaped as to catch and retain all overflow. It is readily attached by passing the tape over the head and tying.

Made of checkered rubber cloth, mounted on a wire frame.

Price ..... \$0.75

# STEEL WIRE WHEEL BRUSHES.

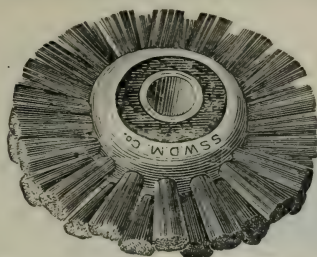
For Cleaning Burs and Files.



No. 1. 1 in. diameter.

To be used on  
Mandrels Nos. 300,  
301.

Price ... \$0.40



No. 2. 1½ in. diameter.

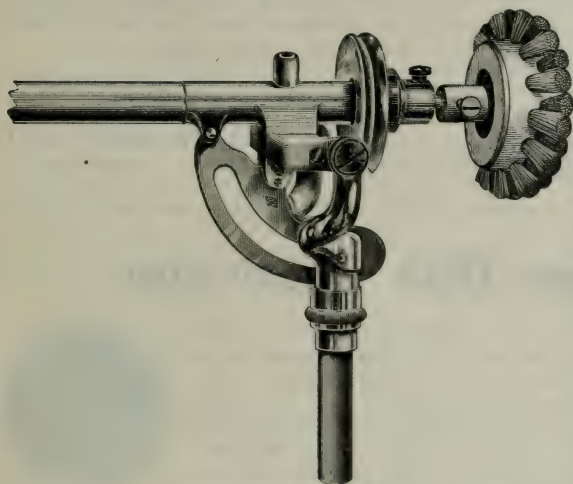
Price.....\$0.50

Chuck for Carrying  
Wheel Brush No. 2.



Price .....\$0.25

## Wire Wheel No. 2 in Position.



Wire Wheels mounted as shown are revolved simultaneously with the engine-bit, and are thus available for clearing debris from the burs whenever the engine is in operation, a few touches of the instrument on the brush being sufficient.

Price, No. 2, complete with Chuck.....\$0.75

## ENGINE-BIT OILER.

Suggested by DR. A. M. HOLMES.

A device to contain oil for the convenient oiling of Engine-bits. Its use will serve to keep the Engine Hand-piece in good condition, preventing the introduction of rust by means of the bit. It consists of an oil-chamber having a substantial base, with a milled cap-cover, holding in position a leather washer, through which there is a hole slightly smaller than the shank of the bit. The bit is passed through the leather into the oil-chamber; when withdrawn the leather wipes off all excess of oil.

Price, Nickel-plated .....\$0.50





# Handy Instrument Sharpener

Suggested by DR. McLEAN.



A miniature emery-wheel for quickly\* putting a keen edge on excavators, chisels, drills, etc. It consists of a metal disk, thick enough to form a rigid support, a paper disk to provide an abrasive surface, with a felt disk between to form a cushion or buffer, and the whole mounted on a Huey Mandrel. The disks are 2 inches in diameter.

With one of these sharpeners in the Engine equipment, an instrument can be put on edge in a moment, or ground or shaped to suit a special case.

Put up in a box, containing 100 Paper Disks, assorted (50 Emery, coarse, 25 Sand, each medium and fine), 2 Felt Disks, 1 Metal Disk.

Price, complete .....	per box	\$0.25
“ Extra Metal Disks .....	each	.05
“ “ Paper Disks .....	per hundred	.20
“ “ Felt Disks .....	each	.02

## Paper Disk Lubricator



The Paper Disk Lubricator affords a ready means of eliminating the rasping sound of the disk working upon the filling, which is most unpleasant to the patient.

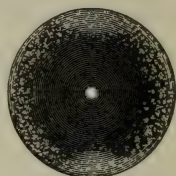
It is of about the consistence of beeswax, is free from disagreeable odor or taste, and melts at a low temperature. Holding the end of a stick of it against the revolving disk develops sufficient heat to carry the preparation over the surface of the disk.

When so coated, the grinding of the gritty surface applied to the filling is almost entirely masked, and the disk is stiffened so that it does its work more effectively.

Another advantage gained by the use of the Paper Disk Lubricator is in the lessening of the liability of the disk to catch in the rubber dam. Many dentists accomplish this by dipping a finger in vaselin and smearing it over the surface of the dam. The Paper Disk Lubricator spread over the surface of the disk is more effective and more cleanly.

Disks coated with Paper Disk Lubricator retain the gold which they remove from the filling. By saving and burning them, this can be recovered.

Put up in the form of a stick (shown full size at the left), covered with tin foil, which is to be stripped off as the Lubricator is used. The illustration to the right is a representation of a disk after use, the gold being shown by the nebulous appearance.



Price .....	\$0.10
-------------	--------

# PERFECTION POLISHING STRIPS.

## Common Characteristics.

These Strips for finishing fillings are thin and tough. They can be insinuated into the narrowest interspaces of the teeth; they have the strength to stand the strain of work. They are charged carefully and skillfully. They are efficient,—do what they are intended to do, and they are durable,—they hold on to the polishing-material till it is worn off in actual service.

There are eight varieties:

**CARBORUNDUM  
GARNET**

**EMERY  
FLINT**

**LAVA  
PUMICE**

**FRENCH EMERY  
ROUGE**

Though called generally "polishing strips," these eight varieties afford a considerable range in character, which naturally divides them into three classes, suited to various phases of the finishing of fillings:

## The Cutters.

Carborundum (of which more anon), Garnet, and Emery, are comparatively coarse, or perhaps more properly, are of a sharper grit. They are in reality cutters, hardly to be reckoned as polishers. Their office is the first cutting down of the excess of fillings, the trimming of margins. They are used because of the rapidity with which they do the work. They work quickly, but they leave the surface full of scratches.

## The Preparatory Finishers.

The second class, which may be denominated dressers or preparatory finishers, comprises the Flint, Lava, Pumice, and French Emery. These are all of a finer grade. Applied after the cutters, they remove the deeper scratches, and leave the dull polish, often called "satin finish," which is preferred by many operators to a high polish. The French Emery, indeed, gives a fairly high polish. The Strips of the second class can also be used for the first dressing down of the excess, but they do not work so rapidly as those of the first class, which are therefore preferable where speed is desired.

## The Polishers.

The third class has only one variety, Rouge—the world's polisher. This gives the high polish, the "burnished gold" effect, leaving the surface like a fine mirror. As before stated, the French Emery Strip approaches this effect, so that it is practically an intermediary between the second and third classes, and will probably meet the desires of those who want a higher finish than the dull polish, but do not approve of the brilliance imparted by the Rouge.

All our Perfection Strips, except the Carborundum, which, as noted below, are in a class by themselves, are cut to 8-inch lengths, and put up in gross boxes, separately or assorted.

Price .....per box \$0.30

## Perfection Carborundum Strips

(of our make) are distinctly the best at the service of the dentist when the requirement is cutting. They are in no sense polishing strips,—Carborundum "bites" too sharply. They will cut enamel, will smooth off a sharp edge of tooth-substance quickly; can be used to dress off points of approximal contact between contiguous teeth for the removal of incipient decay. For the first rough finishing of a filling of amalgam or gold, especially when, as sometimes happens, the filling is made too full, they work quickly. They can be used in the narrowest spaces because of their extreme thinness and great toughness.

<b>Three Grits</b>	{ Coarse, No. 120 }	{ In 1-gross boxes }	{ Strips }	per box \$0.30
	{ Medium, " 180 }	{ Separate or }	{ eight inches }	
	{ Fine, " 220 }	{ Assorted Grits }	{ long }	

## Root and Crown Reducer.

In the Root and Crown Reducer as now made the abrador C is a cone-socket point, and the pintle is mounted on a frame which slips over the handle, to which it is fastened at the desired adjustment by means of a set-screw. The outward end of the frame, to which it is connected by a rather stiff spring, serves as a guide, to

prevent the pintle and abrador from twisting apart.

In use, the abrador and pintle are forced apart by pressing the forefinger upon the guide (D), the pintle is inserted in the root or crown (A) to be trimmed, and the abrador (C) is rotated around it. The abrador will follow and dress the periphery of roots of irregular outline.

Made only for Cone-Socket Handles (No. 3 Knurled is exactly suited to this purpose).

### PRICES.

Root and Crown Reducer, complete.....\$1.75

### PARTS SEPARATELY.

Adjustable Pintle and Guide..... 1.15

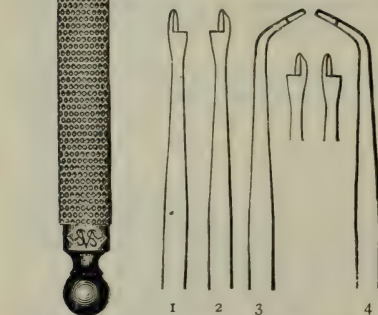
Abrador ..... .45

No. 3 Knurled Cone-Socket Handle..... .15

## Root-Trimmers or Reducers.

Suggested by DR. R. WALTER STARR.

For trimming the edges or reducing the diameter of roots over which collars are to be placed. The shoulder keeps the instrument on the root and limits the penetration of the spur, the knife-edge of which scrapes the side of the root, Fig. 1,



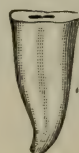
so that it may easily and quickly be given the shape of Fig. 2, or any similar form. Made right and left; the straight pair, Nos. 1 and 2, for use on the superior roots anterior to the molars, and the curved pair, Nos. 3 and 4, for use on all the other natural roots.

Made for Cone-Socket Handles only.

Price .....each \$0.45

FIG. 1.

FIG. 2.

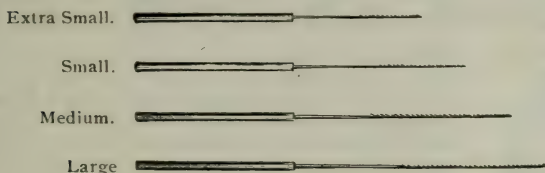




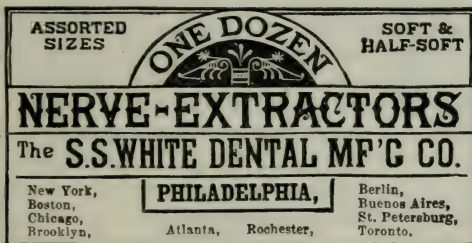
# Barbed Nerve Extractors

The principal requirements in Nerve Extractors are that they shall be small enough to enter the canal, tough enough to stand the necessary strain of manipulation without breaking. Our Nerve Extractors are thin,—the thinnest at the service of the dentist. They are tough,—they have to be to meet the tests we submit them to. They meet the needs of the dentist, and they prove themselves satisfactory in use.

Supplied in these sizes:



*These sizes mean lengths, not diameters. All sizes, in "Soft" and "Half-Soft" tempers.*



*All our Broaches are put up under this label, which is our guarantee of their quality.*

IN STOCK AS FOLLOWS:

No. 1, containing one dozen assorted small, extra small, medium and large sizes,—Soft and Half-Soft.

No. 2, containing one dozen extra small,—Soft and Half-Soft.

No. 3, containing one dozen small,—Soft and Half-Soft.

Other assortments to order without extra charge.

Price.....per package \$0.50

" .....per gross 5.00

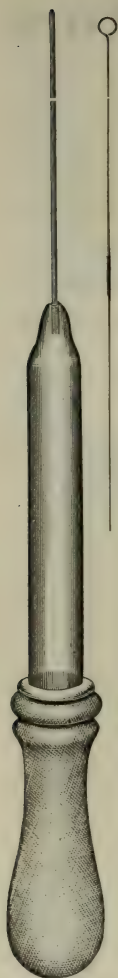
## MINIM SYRINGE No. 29.

Our Minim Syringe No. 29 is simply the principle of the drop tube elaborated and refined to suit the somewhat exacting requirements of dental practice. The glass tube is fused at its constricted end upon a thin platinum pipe, affording a ready means for the injecting of medicaments into root-canals, sinuses, and pyorrhea pockets or sulci. The platinum pipe will resist the action of acids and corrosive fluids like pyrozone, mercuric bichlorid solutions, etc., but it is soft and thin, not intended for rough usage. It can be curved if required by inserting the cleaning wire and bending it carefully around a cylinder of say  $\frac{3}{4}$ -inch diameter. The pipe may be cleansed by holding it over the flame of the annealing lamp or with alcohol. The cleaning wire is more especially to remove occasional obstructions caused by deposits from solutions used.

Besides its principal uses before referred to, the Minim Syringe will carry a drop or two of alcohol to a cavity or a root-canal to dry it.

Shown full size.

Price .....	each \$0.70
" extra Bulbs .....	" .03



## ASEPTIC SYRINGE No. 35A.

In Aseptic Syringe No. 35A we have again a platinum pipe fused into the constricted end of the glass barrel of a drop tube. The open end is modified by forming it into a flange, which serves as a finger-hold. Then we have a hollow glass piston, recessed near the forward end, which is closed to receive a wound cotton packing. The rear end of the piston is open and flanged. A cork stopper makes the hollow piston a convenient receptacle for soluble medicated granules for a concentrated solution, to be diluted by placing one or more drops into the syringe barrel, or for

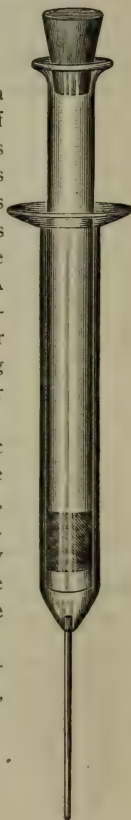
alcohol or ether for cavity drying.

The Syringe, it will be seen, may be easily rendered aseptic with hot water for use with any medicated solution. The piston packing is quickly removed and replaced with another, as it should be when any change is made in the solution used. The glass barrel and piston and the platinum tube are readily cleansed and are proof against the action of acid or corrosive solutions. The pipe may be sterilized by holding in the flame of the annealing lamp or with burning alcohol.

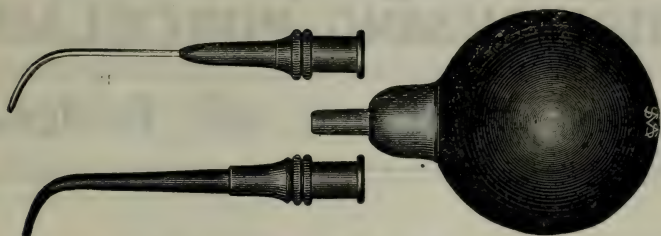
This form of Syringe will be found very effective for injecting antiseptics or other medicaments into root-canals, sinuses, pyorrhea pockets, or sulci.

Shown full size.

Price .....	\$0.60
-------------	--------



## Abscess Syringe No. 33



This Syringe has two points,—one of hard black rubber, and the other with hard rubber hub and platinum point.

It will be found very useful in treating abscesses.

Price, complete, with Points as illustrated.....each \$1.00

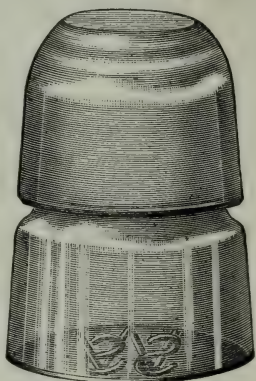
## Office Preparation Bottle No. 6

Office Preparation Bottle No. 6 is wide-mouthed and holds about a half-ounce.

It is a size of the Ground-Glass Cover Bottle intended especially to hold working quantities of perishable preparations, and for those which are used in minute quantities, of which a half-ounce forms a full office stock.

We supply the No. 6 in four colors,—Flint, Blue, Green, and Amber. With different medicaments in different colored bottles, a glance shows the one wanted frequently without needing to refer to the labels. For convenience where a number of these bottles are kept together the labels should be placed on the flat of the cover. The dark-colored bottles will also help to preserve preparations which are sensitive to light.

Price, either color, each \$0.15; per doz. \$1.60



## Square Glass Vials

With Ground-Glass Stoppers



Nos. 1 and 2 Square Glass Bottles, with Ground Glass Stoppers, are respectively half-ounce and ounce, and are known as "Case Vials." They are suitable for office preparations, more especially those kept in small quantity and those liable from their nature to deteriorate unless closely stopped.

Price, No. 1,  $\frac{1}{2}$ -oz. vials.....each \$0.10

" " " " ..per doz. .80

" No. 2, 1-oz. " .....each .15

" " " " ..per doz. 1.50



# **HIGH-FUSING PORCELAIN**

---

FOR

---

## **Inlays, Crowns, and Bridges**

### **The Trend of Experience**

Experience is demonstrating right straight along that porcelains which fuse at high temperatures (above the melting-point of gold) give more satisfactory results than the low-fusing bodies (those which fuse below the melting-point of gold).

### **The Case in a Nutshell**

Said an operator of large experience in the working of porcelain bodies the other day: "The dental profession are coming more and more to the high-fusing bodies. They will go on to the using of yet higher fusing, because the nearer they approach the fusing-point of the best porcelain teeth the more satisfactory will be the appearance of the operation, the more durable the product, be it inlay or crown."

### **Some Special Characteristics**

Our Porcelain Bodies are high-fusing, but their fusing-point is well within the temperature readily attained with electric, gas, and gasoline furnaces. They are easily carved, hold the fine lines of the carving and maintain their color in the fusing heat, have a minimum of shrinkage, and the product is strong and durable, approaching in this respect porcelain teeth. They do not "sputter" or crack.

### **The Platinum Matrix**

For inlay work, a platinum matrix is used with them. The platinum foil which we make for this purpose is about as "plastic" as the gold used with low-fusing bodies, adapts itself readily to any inequality of the cavity as prepared, holds its shape, and last of all, stands the necessary heat.

### **High-Fusing Porcelain Superior**

There is no doubt of the superiority of our High-Fusing Porcelain for the practical uses of the dentist. When the revival of this class of work first began, we went into a series of experiments, the extent of which would scarcely be credited. These experiments settled the question, as between low-fusing and high-fusing bodies, so far as we were concerned. They were practical experiments by practical men, and every result of the hundreds achieved was carefully checked at every stage. The conclusions which these experiments forced upon us are now being corroborated by the experience of inlay-workers and crown-builders.

## OUTFITS FOR WORKING High-Fusing Porcelain.

We have two outfits for working High-Fusing Porcelain, a twelve-color and a twenty-five-color case, the first for the operator who prefers to mix his own shades, the second for those who want the means for approximate results right at hand.



**12-Color High-Fusing Porcelain Outfit for  
Inlays, Crowns, and Bridges.**

This is the original outfit, containing a series of basal shades of bodies, twelve in number, put up in screw-cap jars, numbered on cap and side, 81 to 92. These include grays, browns, yellows, greens, blues, and pink gum color. Included also, as one of the twelve, is a jar of colorless or reducing body, for toning down or reducing the intensity of any one or more of the others, and for producing varieties of shade. One or two of the colors are purposely made intense, at the request of many users. A sample tooth made from each of the bodies is mounted on a small Shade Guide for purposes of matching. This Shade Guide is similar in its working to our regular Shade Guide for Porcelain Teeth.

## Advantages of the 12-Color Outfit.

This outfit is becoming more and more popular. As those who take up porcelain work become familiar with the technique and grasp the possibilities of the art, they want to be in the best position to do their own mixing of shades. With this twelve-color case they can imitate any desired shade, can put a variety of shades into a crown, as nature does.

As an example of the advantages of this set, all the shades of the twenty-five-color outfit are made from these twelve, according to the formulas below. These were selected from some hundreds of shades produced from the original twelve.

### Formulas.

A = $1/83 + 2/87$	J = $1/82 + 2/88$	T = $2/81 + 2/83$
B = $1/82 + 2/87$	K = $1/81 + 2/88$	U = $8/81 + 1/91$
C = $1/81 + 2/87$	L = $2/81 + 2/88$	V = $1/81 + 2/84$
D = $2/83 + 2/87$	M = 86	W = $1/83 + 2/84$
E = $2/81 + 2/85$	N = $4/81 + 1/90$	X = $2/81 + 2/84$
F = 85	O = $1/82 + 2/89$	Y = $2/82 + 2/86$
G = $7/81 + 1/87$	P = $4/83 + 1/89$	Z = $2/83 + 2/84$
H = $1/83 + 2/90$	R = 83	
I = $3/83 + 1/90$	S = $2/83 + 2/86$	

The parts to be taken accurately by weight, and thoroughly intermixed in a mortar.

### The Outfits.

Besides the colors, the outfit contains a pipette bottle with ground-glass stopper, in which the exact quantity of the mixing fluid desired can be taken up; a double-end carving tool something like one of the Evans patterns, but with the working ends of steel instead of ivory, with which any kind of carving may be done; a pair of spring-tempered tweezers, with a sliding lock-pin in a slot, for handling inlays or crowns, or for holding bands; a shade guide; and a No. 13 mixing spatula; the whole inclosed in a neat, well-made oak case with locking device.

### PRICES.

HIGH-FUSING PORCELAIN BODIES, NOS. 81 TO 92, FOR INLAYS, CROWNS, AND BRIDGES.

Complete Outfit .....\$10.00

#### PARTS SEPARATELY.

12 Bottles, Bodies Nos. 81 to 92 .....	per bottle	.50
1 Double-End Carving Tool.....		1.00
1 Pair Locking Tweezers, "K" .....		.75
1 Pipette Bottle .....		.25
1 No. 13 Spatula .....		.25
1 Shade Guide, Nos. 81 to 92 .....		1.00

Oak Case not sold separately.



# OUTFITS FOR WORKING High-Fusing Porcelain.



## 25-Color High-Fusing Porcelain Outfit for Inlays, Crowns, and Bridges.

This outfit comprises twenty-five ready-mixed shades of High-Fusing Porcelain Bodies made by combining the original shades of the twelve-color outfit. They afford the busy practitioner a variety which will enable him to match the great majority of cases which come into his hands without the trouble of experimenting. The shades are lettered A to Z, and are likewise put up in screw-cap jars. The fused samples are of an especially convenient form for trying in the mouth to determine the shade wanted. Mounted on an ebonized stand. The outfit otherwise is the same as that of the twelve-color case.

### PRICES.

#### HIGH-FUSING PORCELAIN, A to Z.

Complete set, including Shade Forms and Stand.....\$12.50

#### PARTS SEPARATELY.

Case containing twenty-five jars High-fusing Porcelain, 1	
Double-end Carving Tool. 1 Locking Tweezers "K." 1	
Pipette Bottle, 1 Spatula No. 13 .....	\$10.00
Shade Forms and Stand .....	2.50
Carving Tool .....	1.00
Locking Tweezers "K" .....	.75
Pipette Bottle .....	.25
Spatula No. 13 .....	.25
Porcelain .....	per jar .40

# Inlay Matrix Pliers

## No. 60



The special use of this neat new pair of Pliers is the forming of inlay matrices. The flat inner faces of the beaks will grasp the foil for the matrix firmly but safely. After the foil is placed in the cavity, a bit of spunk or a pellet of cotton can be carried into it. Then, with the ball points closed, you have an unequaled instrument for pressing the pad against the foil, causing the matrix to follow every inequality in the walls and floor of the cavity.

These "ball-nose" Pliers will also be found superior to those with sharp beaks in any manipulations where there is risk of puncturing the material.

Price .....per pair \$1.75

## Soft Platinum Foil

FOR

### INLAY MATRICES.

Our Soft Platinum Foil for Inlay Matrices is a peculiarly soft—even "plastic"—preparation of pure platinum. There is no harshness in it,—thanks to its purity and the treatment we give it. There is practically no difference in working quality between it and gold rolled to the same thickness,—1-1000 of an inch. It can be readily adapted to every inequality of the cavity, and it has sufficient body to retain the shape given it when removed from the cavity and in the subsequent handling.

If you have not used this foil in making inlay matrices, you have not learned how easily a platinum matrix can be made.

Price (fluctuates) .....per dwt. \$1.45

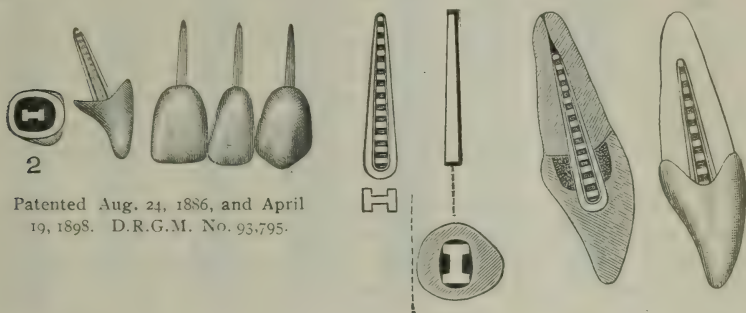
" " .....per oz. 27.50

# "In Everybody's Mouth"

## The Logan Crown.

(That is, in the mouth of everybody who needs an artificial crown; if it isn't, it ought to be.)

Within the past twenty-five years numerous porcelain crowns, with and without attached posts, have been put upon the market. Where are they now? All gone, except the Logan, which has steadily grown in



Patented Aug. 24, 1886, and April 19, 1898. D.R.G.M. No. 93,795.

popularity during the seventeen years it has been in use. The others, both before and since its coming, had their little day of brief vogue, then disappeared from public view. The Logan just keeps on growing in popularity. The more it is used, the greater the number of people who sing its praises. The Logan Crown is well and favorably known to the general public as well as the dentists.

## Reasons for its Popularity.

It has all the elements of success. It has a substantial post of platinum, so imbedded in the material that it is very difficult to detach it. The post is so shaped and so set as to oppose its greatest strength to the greatest strain. The crown is so formed at the cervix, cupped out around the post, as to entail the least labor in fitting and setting. The mounting of a Logan Crown is simplicity itself. When it is mounted, it gives satisfaction to the patient and the operator alike. Properly selected and set, it is difficult to distinguish it from the natural teeth with which it is surrounded. These are not new features of the Logan. They have been with it and of it from the beginning. It has been improved in minor details, but the underlying principle of a properly shaped, substantial post baked into the porcelain, in such way as to afford the greatest strength, is the same as it always was.



# “ETERNAL VIGILANCE IS THE PRICE OF GOOD TEETH”

**T**HIS is the *watchword* of our factories. It is because of this eternal vigilance that we have been enabled to maintain our position throughout a half century as the makers of the “World’s Premium Porcelain Teeth.” We could make “cheap” teeth that could be sold for a lower price, but to do so we should be obliged to cease this Eternal Vigilance in every department of our manufacture. This watchfulness begins with the selection and compounding of minerals and oxids, and extends to the time when the finished tooth leaves the factory; even further, for another critical inspection is given them when they arrive in the sales-room.

One item alone which figures in this Eternal Vigilance has cost the company many thousands of dollars during the last five or six years, the perfecting of the pattern molds so that we could get greater uniformity of size from our duplicate or working molds.

We employ inspectors in our tooth factory who are paid to find fault with the product after it is fired and the teeth completed. These inspectors, through long practice, become the severest critics of our product, and they throw out thousands of teeth weekly, which the average eye would call perfect. Dentists who have been shown through our factory have expressed their surprise at the insignificance of the defects which condemn these teeth in the eyes of the inspector.

We are giving you as near a perfect tooth as we know how to make it after an experience of more than a half century. We have been learning ever since we started, and we are still scientifically investigating the various departments and operations of tooth manufacture with the hope of attaining even greater perfection in our product.

A large percentage of the cheap teeth sold on the market to-day would never pass our inspectors, but would find their way into the mortar to be crushed for the pins.

We have frequently had requests from dentists to sell them, as seconds, the teeth condemned by our inspectors, at a reduced price. We have never listened to such a proposal, as we have always felt that we could not afford to allow anything to go out under our trade-mark except that which was strictly up to our standard,—“Made the best we know how.” We have always believed this was the right policy, and the success of our business proves it. Our sales have increased continuously from the establishment of our tooth factories to the close of 1901; and the monthly reports for the current year indicate that the increase still continues.

Send for our Catalogue of Porcelain Teeth, issued in August of this year, where you will find much to interest you on the subject of Porcelain Teeth. Free of charge.

The "Flexo" Files, Saws, and Finishing Strips have distinct advantages of their own. The Files cut as rapidly as ordinary makes, and they are tempered so that they can be adapted to the surface of the tooth they are operated upon, thus presenting a larger cutting surface. They cannot, of course, be bent like a piece of iron wire, but by manipulating them between the thumbs and forefingers they can be curved a little at a time to the desired form. As there is practically no breakage, they are economical to use. They cut rapidly and smoothly, without dragging.

## "FLEXO FILES."

Separating.

Patented December 1, 1885.



All of the "Flexo" Separating Files are cut on both edges and one side, the other side being smooth or "safe." The regular line has the push-cut. Nos. 000 to 3 have crimped finger-hold; in Nos. 4 and 5, the two coarser cuts, the hold is smooth.

Price, Nos. 000 to 5, Push-Cut .....per doz. \$1.25

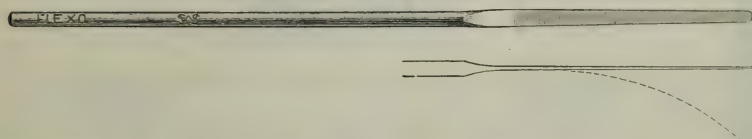
Sold separately by number, or in assorted dozens.

## "FLEXO" FILES.

Plug-Finishing.

Patented December 1, 1885.

Suggested by Dr. H. F. LIBBEY.



This File is made quite thin, cut on only one side, with both edges slightly beveled from the cutting side, rounded, and smooth, to adapt it specially for finishing approximal fillings near the gum-margin.

The dotted line in the side view shows its possible curvature.

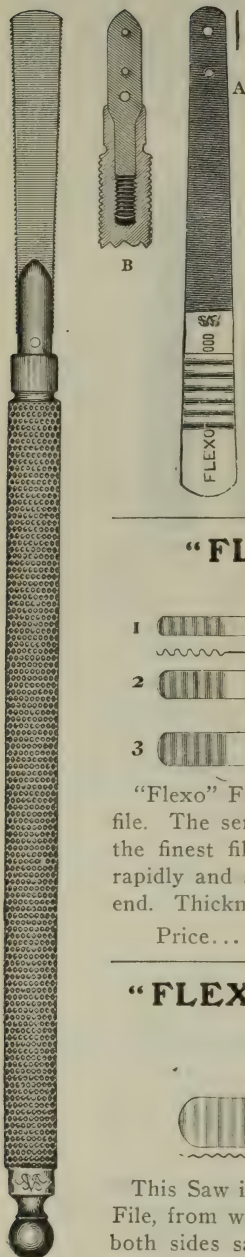
Finger-hold formed by twisting the handle.

Price.....per doz. \$2.00

# PERFORATED "FLEXO" FILES.

Patented December 1, 1885.

Suggested by DR. W. B. FAHNESTOCK.



The perforations in the end of the file at A adapt it for insertion in the split chuck shown in section at B.

The unserrated part of the file is cut off and the instrument is ready for use as shown in the illustration.

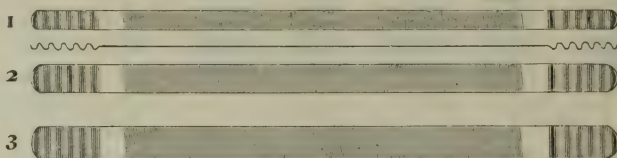
Only Flexo files Nos. 000, 00, 1, and 2 are perforated, and these become draw-cut when used in the chuck-holder.

## PRICES.

Perforated Flexo Files, Nos. 000, 00, 1, and 2, Push-cut.....each	\$0.15
per dozen	\$1.40
Chuck File Holders.....each	.35
Socket Handles (No. 3).....	.15
Complete, one File, Chuck, and Handle....	.65
Complete, Chuck, Handle, and Assorted Dozen Files .....	1.85

## "FLEXO" FINISHING STRIPS.

Patented December 1, 1885.

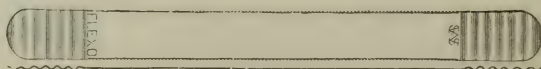


"Flexo" Finishing Strips are in reality a very smooth-cutting file. The serrations are cut very fine; finer and smoother than the finest files. Both edges and one side safe. They work rapidly and smoothly, of course. Crimped finger-hold at each end. Thickness shown by the line between Nos. 1 and 2.

Price.....per doz. \$1.00

## "FLEXO" SEPARATING SAW FOR HAND USE.

Patented December 1, 1885.



This Saw is of the same thickness as the No. 000 Separating File, from which it differs only in being cut on the edges with both sides safe, and in having a crimped finger-hold at both ends. Very fine and thin, as shown.

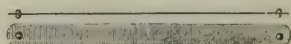
Price.....per doz. \$1.00



# “Flexo” Saws and Files for Saw-Frames

## Saws for Saw-Frames

## Files for Saw-Frames



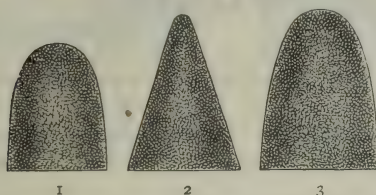
Patented December 1, 1885.

The “Flexo” Saws for Saw-Frames are made with smooth sides and one or both edges cut, as may be preferred; the Files for same use are cut on one side and one edge. Can be used in any of our Saw-Frames.

Price, Saws for Saw-Frame, cut on one edge.....	per doz.	\$0.25
“ “ “ “ “ “ both edges . . .	“	.38
“ Files “ “ .....	“	1.00

## WOOD CONES FOR FINISHING VULCANITE PLATES

Suggested by DR. N. S. BORNEMAN.



These Cones are made of soft wood coated with corundum, coarse and fine grits. They are intended to screw on the taper-end of a lathe-spindle or on a taper-chuck. The illustrations are full size.

Put up in boxes of 1 dozen Cones, assorted forms and grits.

Price .....per doz. \$0.25

## Rouge in Sticks

Rouge in sticks is more convenient, more cleanly, more economical than in the powder form. The sticks are half-round in shape, something over 3 inches in length by  $\frac{3}{4}$ -inch diameter across the flat, each stick wrapped in tin foil. Stripping the foil from the stick as it is used and applying the end to the moving polishing wheel will prove economical, besides being cleanly and convenient. The excellence of Rouge for polishing metals needs no restating here.

Price ..... \$0.15

# ABRADA.

Abrada grinds away the inequalities in vulcanite plates, and polishes them; it does the same for metal plates. No waste, because the stick form gives absolute control of the quantity used.

There are four of the Abrada preparations, each having a specific purpose. Don't mix their duties and you will be pleased with their work.

**No. 1, Fine, for Polishing Vulcanite.**

**No. 2, Medium, for Grinding Vulcanite.**

**No. 3, Fine, for Polishing Metals.**

**No. 4, Medium, for Grinding Metals.**

Put up in oval sticks,  $4 \times 1\frac{1}{4} \times \frac{3}{4}$  inches, each stick in a separate box, neatly labeled. Sold separately, or in boxes containing sets of the four.

## PRICES.

Nos. 1 and 2.....	each \$0.15
“ 3 “ 4 .....	“ .25
In box of four .....	.70

## A METHOD OF SEPARATING

teeth to get room for filling, introduced by the late Dr. Bonwill, employed red base-plate gutta-percha. The work can be done better with The S. S. White Dental Mfg. Co.'s Temporary Stopping, and in the case of the front teeth easier. Our Temporary Stopping softens at a much lower temperature, it can be placed with less pressure, it holds its place better.

## TEMPORARY STOPPING.

(DRESSING SEAL.)

Manufactured by

THE S. S. WHITE DENTAL MANUFACTURING CO.

Made in U.S.A.

Be sure you get the kind which comes to you under a label which says distinctly that it is "manufactured by The S. S. White Dental Mfg. Co." This is the kind which softens at  $145^{\circ}$  F., when it can be worked with slight pressure and without inconvenience to the patient; which does not contract after it is placed; which will hold its form and position as long as a temporary stopping ought to be in place,—weeks if necessary; and which is easy of removal when the time comes.

Made in sticks, pink and white, of two diameters,  $\frac{1}{8}$  and  $\frac{3}{16}$ -inch. Put up in boxes, all white, all pink, or both colors, always both sizes.

Price .....per box \$0.30

# True Dentalloy

SURE      STRONG      WHITE



A few years ago there was a good deal of "haphazard" in the mixing of alloys for amalgams. The quantity of mercury was guessed at; sometimes the amalgam was as stiff as it would work, sometimes it was quite soft. Some operators mixed it soft, and then squeezed out the excess with pliers or other means. Some liked to work the amalgam dry, others preferred to work it soft, wiping off the excess mercury as it was brought to the surface in the packing. Hardly any two operators agreed exactly as to the *modus operandi*, and consequently hardly any two agreed as to results.

Nowadays this is all changed. The rule of thumb has fallen into disuse. It is known that a definite alloy has a definite combining equivalent for mercury; that to get a fixed result the work must be done uniformly. True Dentalloy is a definite alloy. Its combining equivalent is nine to eleven. Properly mixed and manipulated, it makes a filling which can be relied upon.

True Dentalloy is cut fine—powdery. It combines quickly with the mercury. It does not shrink at any stage of the setting, but expands slightly at first,—just enough to fix it firmly in the cavity,—and thereafter remains unchanged in volume. It is properly annealed, so that it holds its properties indefinitely.

Test it alongside of any other alloy at any price, and you will use it thereafter.

Price .....per oz. \$1.50



# ALBA ALLOY



"Alba" Alloy owes its name to its characteristic feature, namely, the whiteness of the Amalgam made from it. This whiteness is not merely that of a new surface. It is a permanent quality, due to the unoxidizable character of the material. Fillings of Alba Alloy remain white in the mouth, even when other amalgams discolor alongside of it.

Alba Alloy is easy working, sets about as quickly as the average, and becomes very hard. It is fairly strong-edged and non-shrinking, and takes a high polish. Usually, however, it looks better unpolished, as the surface produced by simply finishing with a strip of soft muslin or a pellet of cotton blends better with the surrounding tooth-substance, and is therefore less conspicuous.

Alba Alloy will give the best results when the directions for manipulation are closely followed.

Put up in glass bottles, with screw-caps,  $\frac{1}{2}$  oz. and 1 oz., and in 4 oz. cans.

Price, in any quantity....per oz. \$1.50

## "THE OLD RELIABLE"

LAWRENCE'S



AMALGAM

Who first named Lawrence's Amalgam "The Old Reliable" is probably lost in the mists of antiquity. Whoever it was recognized the characteristic which made the reputation of this Amalgam—its capability of being made into fillings which could be relied upon.

Lawrence's Amalgam is always put up in a white lithographed envelope covering a brown one containing the amalgam, with Trade-Mark on the lap of each, and both copyrighted. Put up in  $\frac{1}{3}$  oz.,  $\frac{1}{2}$  oz., and 1 oz. envelopes.

### PRICES.

1 ounce..\$3.00    2 ounces..\$5.50    4 ounces..\$10.00    10 ounces..\$20.00

**The S. S. White Dental Manufacturing Co., Chestnut St., Cor. 12th St., Philadelphia, Pa., is Sole Agent, and all communications should be addressed accordingly.**

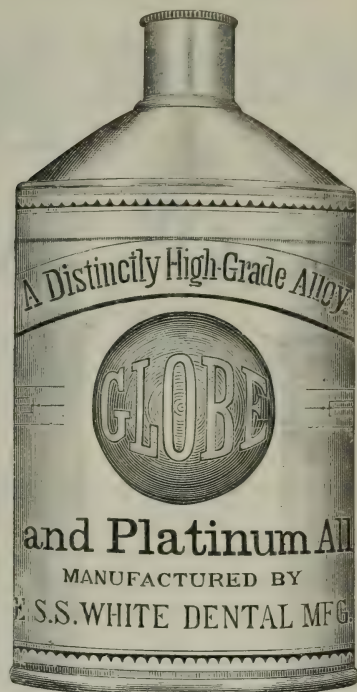
# GLOBE ALLOY



FILINGS.



SHAVINGS.



A distinctively high-grade alloy, containing tin, silver, gold, and platinum, and affording all the advantages which come from the admixture of the higher metals.

Carefully alloyed and properly cut, its quality is remarkably uniform. Wherever the characteristic qualities of a gold and platinum alloy are desired, the Globe will be found to meet the requirements.

Differences in methods of operating cause one dentist to prefer his alloy cut in filings, another to choose shavings. To meet both views, we put up the Globe Alloy in both shavings and filings.

For convenience in handling and keeping, we put it up in quantities of 4 oz. in enameled metal flasks. Smaller quantities are put up in envelopes containing  $\frac{1}{2}$  oz. and 1 oz.

## PRICES.

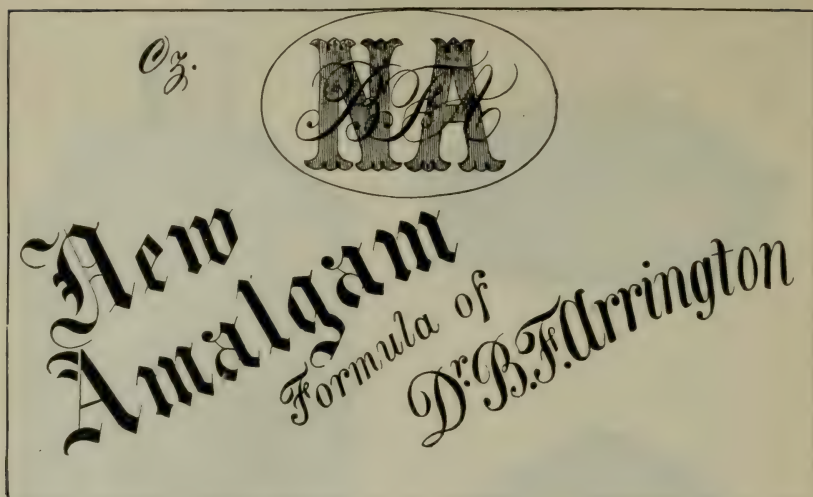
Filings or Shavings.....	per oz.	\$2.00
" " " .....	20-oz. lots	30.00

## TOWNSEND'S AMALGAM

Has a record of nearly a half-century. A good, plain, old-fashioned tin and silver alloy which can be depended upon. We make it from the old formula of Dr. Townsend. Put up in ounce and half-ounce envelopes.

Price, in any quantity .....per oz. \$1.50

# Arrington's New Amalgam.

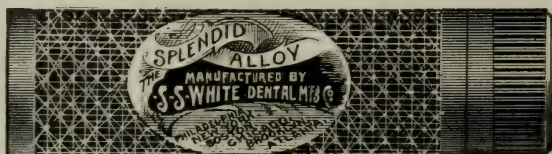


The merits of Dr. Arrington's "New" Amalgam early gained it a wide celebrity, and it holds its place, after a third of a century, because of its uniformly good working qualities and successful results. Fillings made of Arrington's "New" Amalgam hold their color well, preserve the teeth, and wear equal to any others. A never-failing demand testifies to its popularity; its continuous and exclusive use, through long terms of years, by many prominent practitioners is evidence of its satisfactoriness. It is and has been one of the most extensively used amalgams before the profession.

Put up in  $\frac{1}{2}$  oz. and 1 oz. envelopes. 4 oz. lots in enameled metal screw-top flask similar to that used for the Globe Alloy. This flask is a handy device for keeping the amalgam.

Price, in any quantity .....per oz. \$1.50

## "Splendid" Alloy.



"Splendid" Alloy has been largely used for contouring, because of its toughness and its habit of retaining its color. Its hardness also makes it especially adapted for large fillings. Works best with a minimum of mercury. Fairly quick setting. Put up in  $\frac{1}{2}$  oz. and 1 oz. enameled metal boxes.

Price, in any quantity .....per oz. \$1.50



## To the Dental Profession

---

# Contour Alloy

Although I wrote in no indefinite manner regarding "Contour Alloy" in my notice of the appointment of the S. S. White Dental Manufacturing Company as sole agent for my make of plastic filling materials published in the December, 1901, COSMOS advertisements, p. 24, I yet think it due to that alloy, and to the work I have done for its development, that it should be specially placed before the dental profession as making an amalgam for usual work that is *by far* the best of its class.

Since I retired from professional work in 1896 I have devoted myself to that laboratory work in which I had been engaged as a lecturer and teacher for over twenty years, and with this experience I have worked mainly for the improvement of

## Contour Alloy

Having attained ample edge-strength, desirably prompt setting, ease of amalgamation, non-shrinkage and slight expansion, experiments were continued for increasing its already remarkable maintenance of color, which three years ago was *twice* greater than any other dental amalgam made.

These experiments have yet further increased this very important attribute until in the most recent severe testing with 60 grains of sulphuret of potassium to 1 oz. of water made as in comparison with 8 of the most extensively advertised alloys of this country and England, "Contour" maintained its color for *more than three times* the number of hours scored by any of its competitors.

It is from this showing that I place "Contour" as the only truly "first-class" amalgam alloy for usual work ever offered to dentistry, and as the nearest approach yet made to an "Ideal Filling Material."

(Signed) J. FOSTER FLAGG.

---

### PRICES

Contour Alloy.....	per oz.	\$3.00	{	5-oz. lots	\$12.50
				10 " "	22.50
Submarine Alloy.....			{	5 " "	10.00
Facing Alloy .....		2.50	{	10 " "	18.00
Gutta-Percha Stopping .....				1/2-oz. pkg.	1.00
Oxychlorid of Zinc .....				1/2 " "	1.00

---

## THE S. S. WHITE DENTAL MFG. CO.

SOLE AGENT

# THE S. S. WHITE COPPER AMALGAM

---

Copper Amalgam has come of late years into large use in the filling of children's teeth, more especially the molars of the deciduous set. It is antiseptic and non-shrinkable, and prevents the recurrence of decay. It is very plastic, easily manipulated, and slow-setting, so that all the necessary time may be taken. It is non-irritating, can therefore be placed in close proximity to the pulp, and it is so easily manipulated that in such event it can be placed without undue pressure upon the pulp. A filling is quickly and easily finished. For these reasons, it is regarded by many as the best filling for children's teeth in positions where its discoloration is not noticeable.

For practically the same reasons, and because also in many instances it seems to have a distinct preservative effect upon them, it is highly regarded in the filling of adult molars of "soft," chalky structure.

Our Copper Amalgam is, just as it always has been, fully equal to any, and superior to most of its class.

Put up in 1-ounce boxes.

### PRICES.

Ounce .....	\$1.00
5 ounces .....	4.00

---

## CALCAR

### A Substitute for Molding Sand.

Suggested by DR. A. D. GRITMAN.

This compound is free from some of the objections to the various forms of Molding Sand. It does not require the care to keep it in good condition; is free from odor, both in the can and when having metal poured into it; does not become "lumpy" from use; does not dry out and require re-tempering when exposed to the atmosphere.

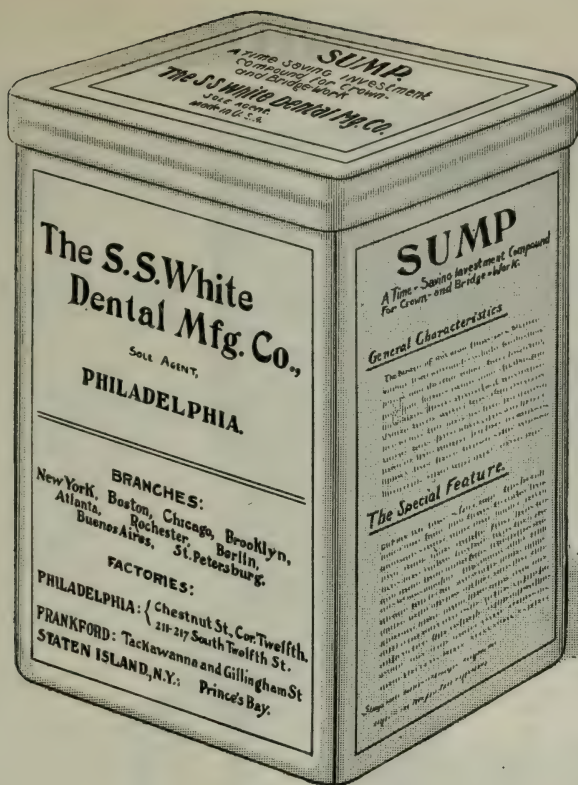
As a matter of fact, while it will lose a portion of its water when used continually—the frequent contact with the molten metal is bound to cause evaporation—all that is necessary is to leave it exposed to the air for a few hours, and its working quality is restored, because it is hygroscopic.

Calcar is clean, sightly, and may be said to be always ready for use. It copies models exactly and smoothly in every detail. Models and dies may be cast in it with zinc, babbitt-metal, or any of the fusible alloys. Any style of flask may be used.

Calcar as sold has just moisture enough to work well. With little care it keeps in good condition for years. A tin can is a good receptacle to store it in. Whenever it begins to show a little dryness, a short exposure to the air will enable it to absorb sufficient moisture to restore its condition.

Put up in 2-qt. cans.

Price .....	per can \$0.30
-------------	----------------



# SUMP

## AN EXCELLENT INVESTMENT.

Sump as an investment material is unexcelled in its practical working qualities. It makes a good model, it holds together firmly, it does not crack, it can be built onto with the assurance that the built-up portion will not separate in the firing, it holds the teeth securely and protects them, and it is readily removed from the model after the soldering is completed.

## SAVES TIME.

Sump mixes quickly, because it requires little water, and dries out quickly, because it gives up the water easily. An investment of it can be put into the oven or under the blow-pipe almost as soon as completed, so that the soldering can go on promptly. It thus facilitates rapid work and saves valuable time.

Sump is a powder of pale lilac color, which becomes deeper when it is mixed.

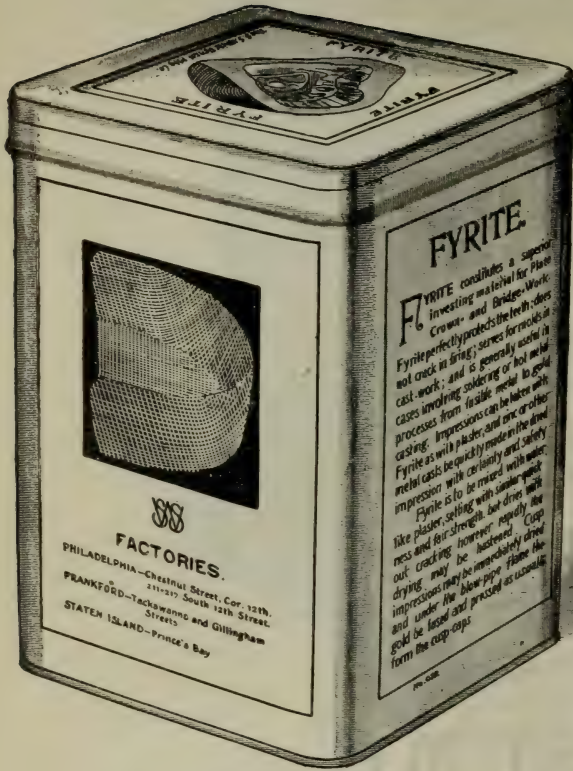
Sold in one-quart cans (2¼ lbs.) and in bulk.

## PRICES.

Per can .....	\$0.75
(Bulk, 10 lbs. or over) per lb. ....	.25
Per quarter bbl. ....	15.00



# FYRITE



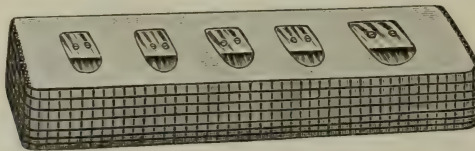
Fyrite constitutes a superior investing material for Crown- and Bridge-work. Fyrite perfectly protects the teeth; does not crack in firing; serves for molds in cast-work; and is generally useful in cases involving soldering or hot metal processes from fusible metal to gold casting. Impressions can be taken with Fyrite as with plaster, and zinc or other metal casts be quickly made in the dried impression with certainty and safety.

For Bridge Impressions add  $\frac{1}{4}$  part plaster.

Fyrite is put up only in neat quart cans, as shown in the illustration.

Fyrite .....per can \$0.25

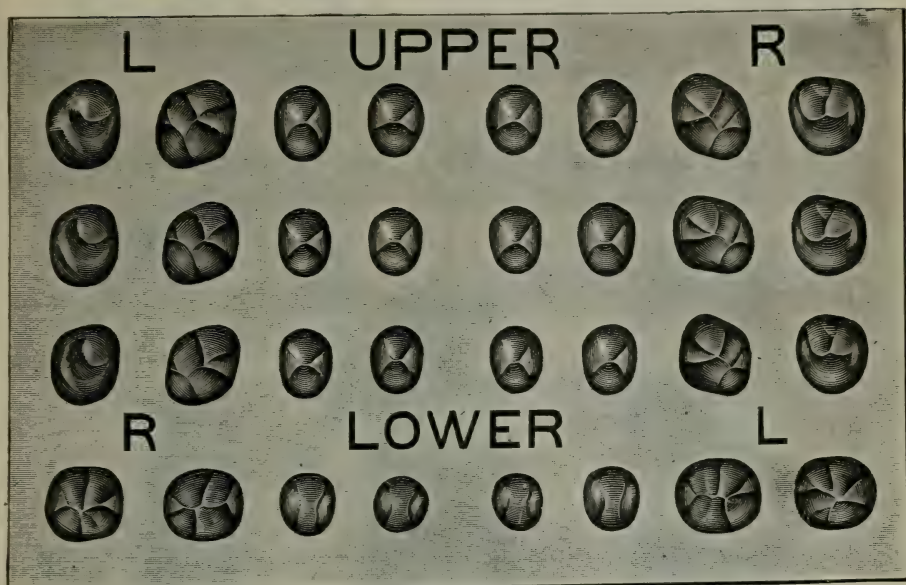
## Wire Gauze for Making Investment Frames FOR CROWN- AND BRIDGE-WORK.



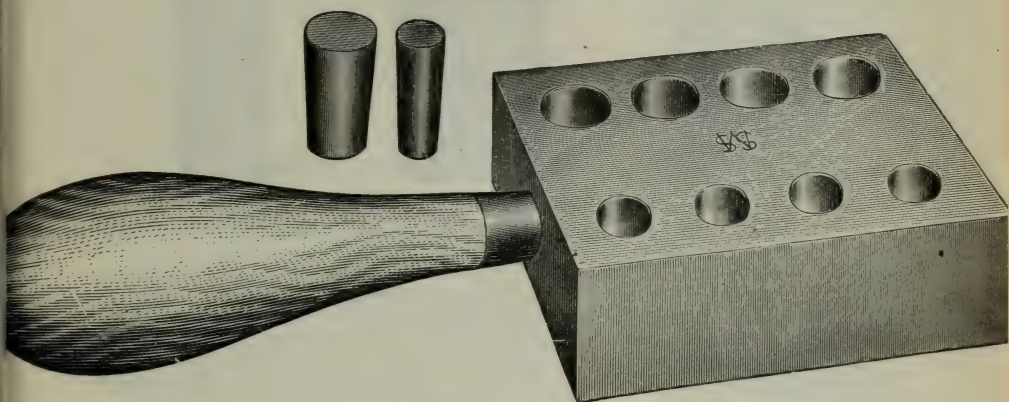
For single teeth or crown investments, or for backing a set of fronts, or an entire set, one may easily and rapidly shape a parallelogram of gauze, cutting say half-inch long slits near the four corners, and bending the sides and ends to form a box-like frame, into which the thick-mixed batter may be put and the backed teeth be pressed in. Such framed gauze investments may be quickly made, easily handled, immediately dried (for the meshes allow rapid evaporation), while the conductive wire hastens the heating to the soldering temperature.

Price, Gauze in a roll, 24 x 6 inches.....per box \$0.30

# IMPROVED CROWN DIE-PLATE AND HUB-MOLD.



DIE-PLATE.



HUB-MOLD.

The Die-Plate of this extremely practical set of appliances for embossing or striking up gold caps expeditiously contains three sets of intaglio dies for upper bicuspsids and molars, affording a variety of shapes and sizes which experience teaches will well cover the needs of practical work. The shapes of all the dies are practical, and there is sufficient variety to meet almost any case. The Hub-Mold contains a series of holes for making hubs of sizes corresponding to the dies.

The Die-Plate is made of a special hard metal, the Hub-Mold of cast iron.

Full description and directions for use accompany the apparatus.

## PRICES.

Die-Plate .....	\$3.00
Hub-Mold .....	1.00

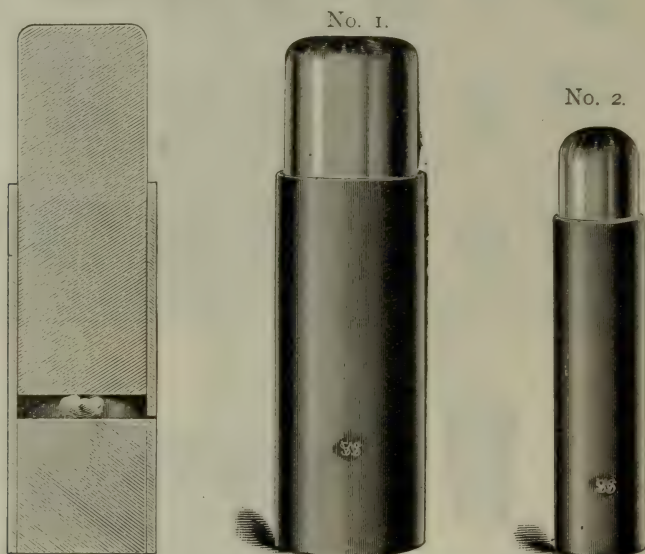
# SWAGING DEVICE

Design of FRED. A. PEESO, D.D.S.

---

Takes the Place of a Rolling Mill for Small Work

---



Illustrations half size.

Every crown- and bridge-worker has occasion to roll out small pieces of plate for cusps or band, but not every office has a pair of rolls handy. This device will supply the need in such cases. It will also enable the operator to use his gold scrap economically, by melting it down into a button, and swaging it to the desired thickness. Of course, gold scrap for this use must be clean and care must be taken that it is of the proper karat.

The sectional view shows the construction. A strong brass barrel is solidly tamped at one end with a substantial steel plug, forming an anvil, and fitted with a heavy steel plunger. The plunger is fitted as closely to the barrel as a cylinder to its piston. The faces of the plunger and the plug or anvil are also finely finished, and present two perfectly flat, smooth surfaces to each other. It is obvious that a piece of gold plate can be quickly hammered or swaged out between the plunger and the anvil and that it will be smooth and of uniform thickness throughout.

Two sizes of the Swagers are made. No. 1, about  $5\frac{1}{2}$  inches long over all by  $1\frac{1}{2}$  inches in diameter of plunger. This size is large enough to "swage" a piece of metal of sufficient size to make any band.

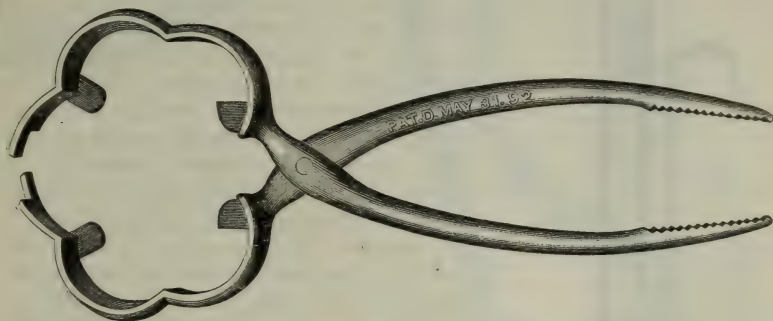
No. 2, about  $4\frac{1}{2}$  inches long over all by  $\frac{7}{8}$  inch in diameter of plunger. A convenient size for swaging pure gold for cusps.

Price, No. 1.....	\$2.75
" " 2.....	1.60



# FLASK LIFTER and HOLDER

Invention of DR. E. A. BRYANT. Patented May 31, 1892.



This Flask Lifter is a convenient tool for handling flasks. The serrated ends of the handles may be used for lifting the flask from the vulcanizer. The clamp end will hold any size or form of flask, while fastening screws, or for other manipulation. It is well finished, and heavily japanned to prevent rusting.

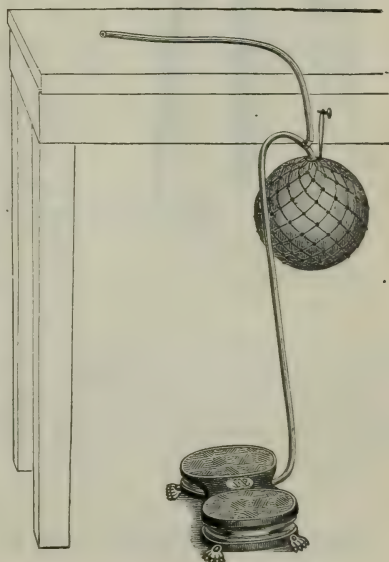
Illustration a little more than one-third size.

Price ..... \$0.65

## ENGLISH PATTERN DOUBLE-ACTION FOOT-BELLOWS.

This apparatus, including the rubber reservoir, furnishes a continuous and even air supply sufficient for all blow-pipe work. It is operated by an easy rocking motion of the foot. It is in effect two blowers; while the air is being driven through the pipe from one of them the other is filling, and thus a more even air-pressure is obtained than is possible with a single-action apparatus.

Price ..... \$5.00



ADVANCE IN PRICE.

# LEE BLOW-PIPE

## IMPROVED.

This blow-pipe has won favor by the great volume of its brush-flame for heating up work, by the fine point of its wire-flame for flowing solder, and by keeping alight. The size and character of the flame are controlled by the lever B. In the Blow-pipe as now made, the screw A is used to frictionally adjust the lever B to permit its free movement under the thumb or finger and yet hold it still whenever the lever is let be. The full, partial, or fine flame can thus be continuously directed on the work; or the lever may instantly be moved to vary the flame at will. By this means the soldering process is simply perfected.

Price ..... \$3.50

# Gear's Shaded Pink Rubber.

Patented March 24, 1891.

Gear's Shaded Pink Rubber makes a satisfactory imitation of the gum vulcanite dentures. All that is necessary is to place the Shaded Rubber around the teeth and over the face of the plate, and vulcanize as usual. This Rubber shades off in color as the natural gum does, the light pink at the necks of the teeth gradually deepening to the full red of the higher portion of the gum. Its

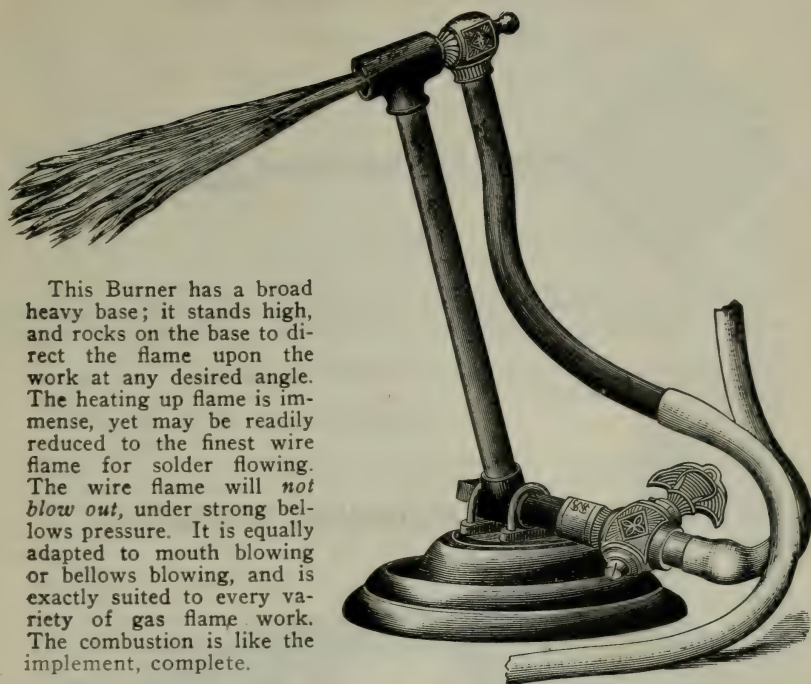
use takes a little more time and care than the usual way, but the result will more than repay the extra labor.

Gear's Shaded Pink Rubber is put up in strips  $\frac{1}{8}$ ,  $\frac{5}{16}$ ,  $\frac{7}{16}$ , and  $\frac{9}{16}$ -inch wide, and sold in packages of assorted widths.

Price, 3-oz. package.....	\$2.75
" 1- " " .....	1.25

THE S. S. WHITE DENTAL MFG. CO., Sole Agent for the United States.

## THE "COMPLETE" GAS BURNER.



This Burner has a broad heavy base; it stands high, and rocks on the base to direct the flame upon the work at any desired angle. The heating up flame is immense, yet may be readily reduced to the finest wire flame for solder flowing. The wire flame will *not blow out*, under strong bellows pressure. It is equally adapted to mouth blowing or bellows blowing, and is exactly suited to every variety of gas flame work. The combustion is like the implement, complete.

Every Burner is thoroughly tested before leaving our factory.

Price ..... \$1.50

## WIRE SOLDERING FRAME No. 1.

Devised by DR. C. L. ALEXANDER.



For soldering gold crowns or small bridge pieces. The heat passes through the meshes of the wire readily, so that all parts of the piece can be heated evenly. Crowns are thus soldered without changing. Small bridge pieces can be held over the flame for heating up as well as soldering.

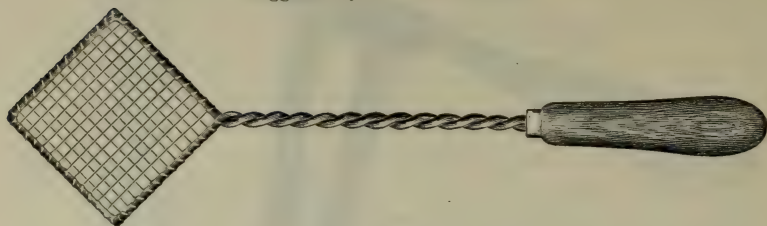
The handle is eight inches long, so that there is no inconvenience from the conduction of the heat to the hand while manipulating the frame.

Price .....each \$0.15



## WIRE SOLDERING FRAME No. 2. FOR CROWN- AND BRIDGE=WORK.

Suggested by DR. D. T. PEPPER.



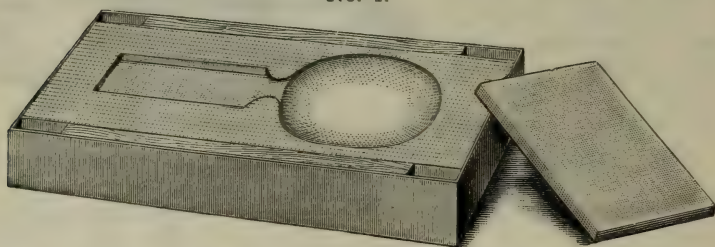
This Frame is suitable for holding the largest pieces of crown- and bridge-work. The whole instrument is 16 inches long, the net frame is  $3\frac{1}{2}$  inches square.

The wood handle protects the hand under any degree of heat that may be required in soldering.

Price .....each \$0.50

## ASBESTOS SOLDERING BLOCKS.

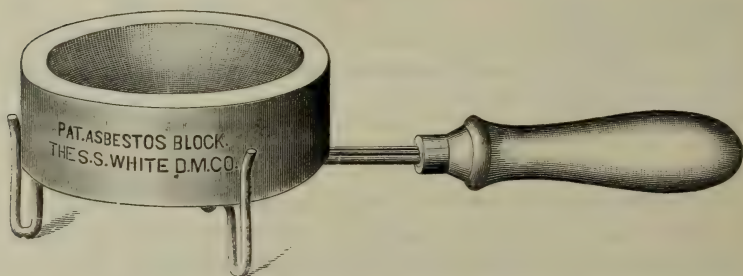
No. 1.



No. 1. Asbestos Soldering, Melting, and Ingot Block, 6 inches long,  $2\frac{1}{2}$  inches wide,  $\frac{1}{2}$ -inch thick. Put up in a tin box with directions for use.

Price ..... \$0.50

No. 2.



No. 2. Asbestos Soldering Block,  $4\frac{1}{2}$  inches diameter,  $1\frac{3}{4}$  inches high. Concave top, with or without holder.

Price, No. 2, with Holder .....\$0.85  
 " " without Holder ..... .60  
 " Holder separately ..... .25

# BORAX—Powdered and Calcined.

Borax in one form or another is the practically universal flux in dental soldering operations. It is used in crystals,—lump or powdered,—or in a calcined powder, with and without a vehicle for convenient handling.

**Calcined Borax** has advantages over the powdered crystals, in that, having parted with the water of crystallization, it does not boil up when melting and push the bits of solder out of position. This boiling up of the powdered crystals is really the stage of calcination, through which the Borax must pass before it melts down and runs over the solder and joint. It is the same way when lump Borax is rubbed down on the slate. The calcined form has been through this stage, and merely melts down to its work. Even when the calcined Borax is mixed with water to form a paste, the water does not combine with the Borax chemically, and hence is readily given up on the application of heat, with the minimum of bubbling.

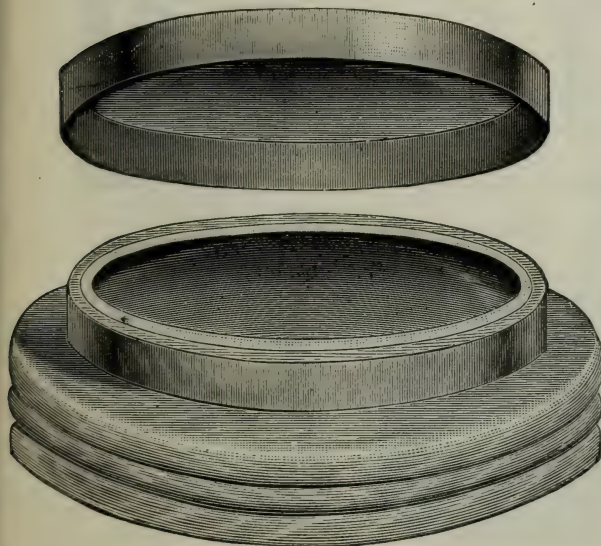
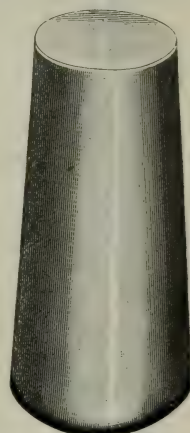
Borax, in powdered crystals and calcined, is put up in wooden boxes.

Price, Plain Powdered Crystals .....	per box	\$0.08
"    Calcined .....	"	.15

## BORAX CONES.

Borax Cones supply a clean flux in convenient form, making its use an economy. Great pains are taken in the preparation of the Borax to eliminate every form of impurity. Then it is put up in the form of truncated cones, 2 inches long by  $\frac{3}{4}$  inch diameter at the larger end, covered with foil. Used, of course, by rubbing off as desired on the "Borax Slate." An unequaled flux; a clean way of using it; no waste.

Price ..... \$0.10



## BORAX SLATE.

It is well recognized that the most suitable flux for delicate soldering operations, as in bridge-work, is borax ground with water to a cream-like consistence. The appliance which is here offered as a substitute for the slates ordinarily used is handy and cleanly for the purpose. It consists of a shallow, saucer-shaped glass dish with a ground surface let into a wood block, which has a metal cover.

Price ..... \$0.35

## SOLDER TWEEZERS "L."

This pair of Solder Tweezers has a long reach, and the points are fine enough to pick up small bits of solder and place them without interfering with the view. The angle at which the points are placed is very convenient, and the spring of the Tweezers is right for efficient work. They wear the trade-SS-mark, which is a sign that they are made throughout in the best manner. Unpolished nickeling.

Price .....per pair \$0.30

## SOLDER TWEEZERS "G."

Pattern by DR. F. S. BELYEA.

These Solder Tweezers are made long and slender in order to afford extreme delicacy of manipulation. The least pressure at the ends of the handles holds the solder or collar, and the slightest movement of one or both handles releases it. The extreme tips of the beaks are the working point. The illustration shows the appliance about half size, with the beaks exhibited full size in the side view. The full length is 8½ inches. Unpolished nickeling.

Price .....each \$0.30



## BRACKET=TABLE LAMP No. 22.

Suggestion of DR. C. EDMUND KELLS, Jr.



Everything about this Lamp testifies to its advantages. It is small and neat; it occupies little space and is ornamental in its appearance. It is convenient, economical, and durable. It is out of the way; it is vapor-tight, and the shape assures the confinement of the alcohol close around the wick; it is substantially made throughout—screw-threads well

cut and no flimsy parts to wear out. All metal portions nickel-plated.

The body of the Lamp is of fine crystal-clear glass with a substantial nickel-plated cover, in which is seated a screw-cap, which is prolonged upward and bored through lengthwise to form the wick-tube. A slip-cap for the wick fits snugly the shoulder above the milled edge, preventing evaporation.

It is attached to the bracket table by a metal bracket, having an eye which fits the Lamp loosely under a shoulder in the metal cover. When the bracket is screwed to the table the Lamp is dropped into the eye and is thus securely suspended at the side of the table without danger of upsetting and without occupying any portion of the upper surface of the table. A cylindrical support for the wick-cap is let into the bracket.

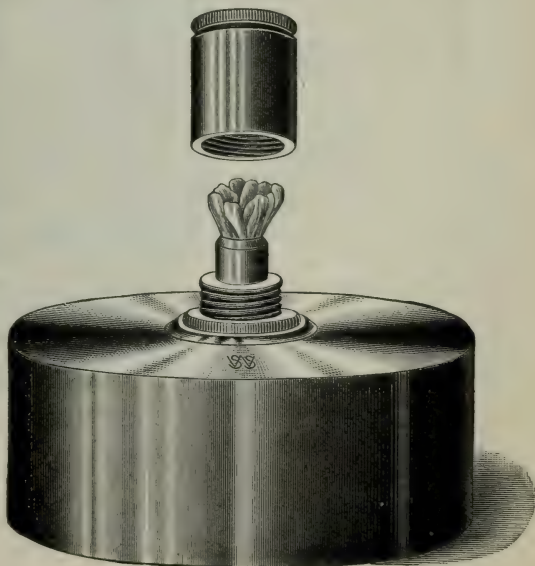
Price .....\$1.00

## CAPITAL LAMP No. 21.

The Capital Lamp (shown full size) is the most convenient for the student's case, occupying less space vertically than any other of our alcohol lamps.

Leather washers make it entirely secure from leakage in any position. Made of brass, nickel-plated, and finely finished.

Price ..... \$1.00



# ALCOHOL LAMP No. 5



Lamp No. 5 is made of flint glass. The neck of the lamp and inner surface of the cap are ground so as to fit snugly, and thus prevent the evaporation of the alcohol. No. 5 is  $4\frac{1}{4}$  inches high, 3 inches diameter.

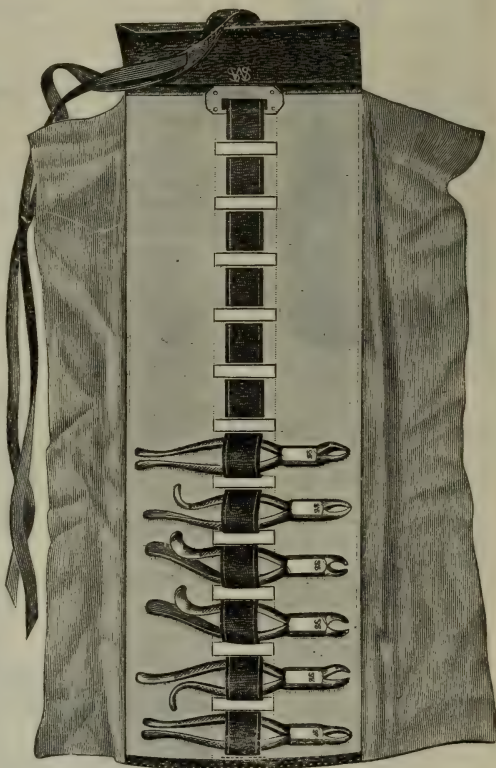
Price ..... \$0.50

## ADVANCED PRICE.

### Rolling Cases

These Cases, made of morocco, lined with buff sheep and provided with flaps of chamois, are specially designed to hold and protect forceps against rust and dust. Width about 8 inches; length governed by the number of spaces—a 12 space case being  $26\frac{1}{2}$  inches long. Made with 9 and 12 spaces.

The forceps are held by a strap running across the center through metal-guarded keepers. These keepers are formed by slitting the lining. The strap with braid attached for tying acts as a binder when the Case is rolled up. Guards nickel-plated.



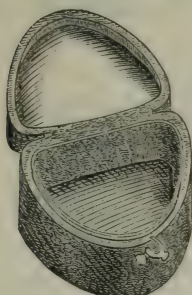
## PRICES.

9 spaces for Forceps, Instruments, etc.....	each \$3.50
12 " " " " " " .....	" 4.25
Rolling Case for Burs for Students .....	.50

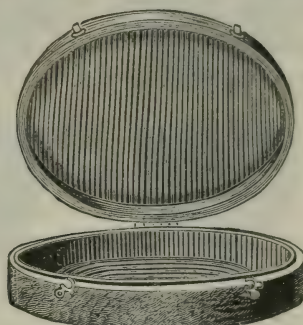
Any other size made to order.

ADVANCE IN PRICES.

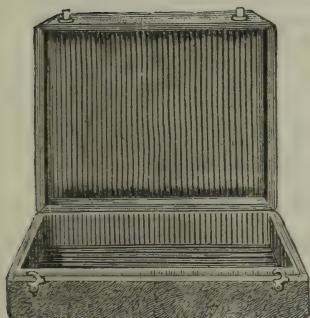
# Cases for Artificial Teeth



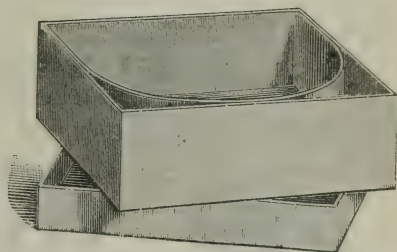
Half Oval.



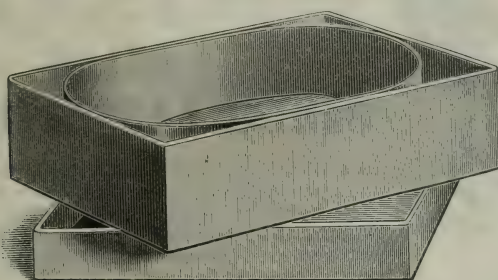
Oval.



Oblong, No. 7.



No. 9.



No. 8.

## PRICES.

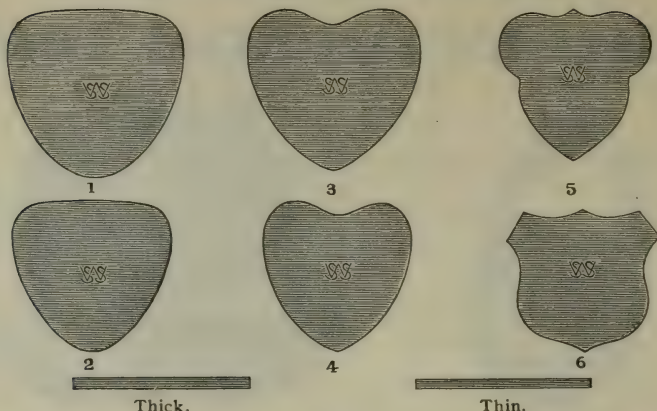
Nos. 1 to 4 are Half Oval, No. 5 is Oval, and Nos. 7 to 9 are Oblong.

- |    |  |          |        |
|----|--|----------|--------|
| 1. | Cotton-Velvet lined, $3\frac{1}{2} \times 2\frac{3}{4} \times 1\frac{1}{2}$ in., Leather Hinge.....      | each     | \$0.80 |
| 2. | " " " $3 \times 2\frac{1}{2} \times 1\frac{1}{2}$ in., Leather Hinge.....                                | "        | .80    |
| 3. | Satin and Silk-Velvet lined, $3\frac{1}{4} \times 2\frac{1}{2} \times 1\frac{1}{2}$ in., Brass Hinge.... | "        | 1.00   |
| 4. | Card-Board, Paper lined, $3 \times 2\frac{1}{2} \times 1\frac{1}{8}$ in.....                             | per doz. | 1.25   |
| 5. | Satin and Silk-Velvet lined, $4\frac{1}{2} \times 3\frac{1}{4} \times 1\frac{1}{4}$ in., Brass Hinge.... | each     | 1.50   |
| 7. | " " " $4\frac{1}{2} \times 3\frac{1}{2} \times 1\frac{3}{8}$ in., " " " " " " " " " " " "                | "        | 1.00   |
| 8. | Card-Board, Paper lined, $4 \times 3 \times 1\frac{1}{4}$ in.....  | per doz. | 1.50   |
| 9. | " " " $3 \times 2\frac{1}{2} \times 1$ in.....   | "        | 1.25   |

The above are outside measurements.



## AIR=CHAMBER PATTERNS.



Each form of our Air-Chamber Patterns is made in two thicknesses, Nos. 15 and 17 B. & S. gauge, affording practically a choice of twelve styles. They are put up in boxes containing a dozen each, either of separate numbers or assorted thin or assorted thick.

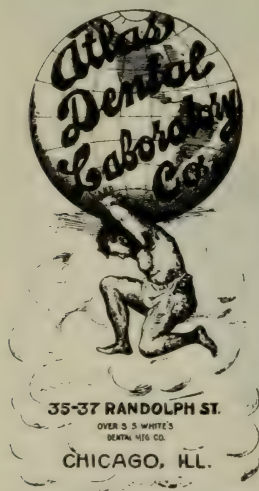
Price, Thick .....per doz. \$0.25  
 " Thin ..... " .20

## CHAMBER METAL.

THICK, No. 15, AND THIN, No. 17, B. & S. GAUGE.

Put up in Envelopes containing 1/2 lb. ....per pound \$0.25

W. J. TRUMPOUR, Mgr. DR. J. C. McLEAN, Sup't.



## It's No Longer a Question

as to where dentists receive the best workmanship and materials or the most prompt service, as the

## ATLAS DENTAL LABORATORY CO.

is admitted by all first-class dentists who are in a position to judge, to have the largest and most competent aggregation of expert mechanical workmen ever before known to operate under one management, and their business methods are in strict harmony with their work and materials. Others may duplicate their prices, but that's all.

## Is the Best Too Good for You?

"Catalogues mailed upon application."  
 Highest prices paid for gold and platinum scrap.

## ATLAS DENTAL LABORATORY CO.

INCORPORATED

OVER THE S. S. WHITE DENTAL MFG. CO.

35-37 RANDOLPH STREET, CHICAGO, ILL.

Telephone Central 1780.

Please mention DENTAL COSMOS.

*The Best Antiseptic for both Internal and External Use.*

# LISTERINE

Listerine promptly destroys all odors emanating from diseased gums and teeth, and, by internal use, the foul gases from the stomach—an advantage the dentist will especially value for the relief of nervous dyspepsia during the treatment of the teeth. It is a *perfect tooth and mouth wash*, non-secret and professional, and therefore has received the highest recognition as the best general antiseptic for a dentist's prescription.

*"LISTERINE is the strongest and safest of the antiseptics which are available for the prophylactic treatment of the oral cavity."—Miller.*

For the patient wearing bridge-work or artificial dentures, and as a daily wash for the preservation of the teeth, Listerine is freely prescribed by many successful practitioners, who are aware that too often the skill of the dentist is questioned when the real cause for dissatisfaction is due to the patient's negligence in properly caring for the teeth and mouth.

*"The Dentist's Patient" and "Listerine in Dental Practice," two interesting pamphlets for the dental practitioner, may be had upon application to the manufacturers of Listerine.*

LAMBERT PHARMACAL CO., St. Louis, U. S. A.

# SOZODONT

Alkaline, Astringent, Antiseptic

**SOZODONT** possesses the three characteristics which are generally conceded to be essential to a perfect dentifrice and mouth-wash. Its use in dental offices, not only as **A PLEASANT DEODORANT AND WASH**, but also as a remedial agent as well, is steadily increasing. Its alkaline reaction,—**A FEATURE OF PRIME IMPORTANCE** from a dentist's standpoint, though possessed by few of the many washes on the market,—is pronounced, though slight. As an astringent, its effect is mild, but marked. The antiseptic feature has recently received much attention and is now as near perfection as the efforts of experienced chemists can attain.

We wish every dentist to **BE FAMILIAR WITH SOZODONT**. Samples for trial will be sent to any dentist in America, together with Professor Hill's and Professor Norton's Analyses of Sozodont, "Uses of Sozodont in Dentistry" and litmus for testing. We invite correspondence.

**HALL & RUCKEL**

Established 1848

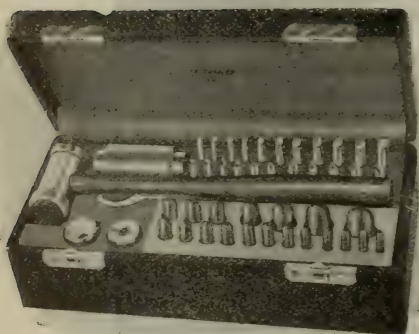
NEW YORK CITY

# The Turner Prosthetic Dental Systems and GASOLINE PORCELAIN FURNACE No. 1.



## IMPROVED, SIMPLE, RELIABLE,

With the three sets illustrated and The Turner Porcelain Furnace No. 1, a dentist has a complete outfit for preparing all kinds of Crown and Bridge and Inlay work. No matter what the character of the work, he is master of the situation.



The Turner Seamless Gold Crown System, complete with case, \$25.00.



The Turner Porcelain Crown and Bridge System, complete with case, \$10.00.



The Turner Tooth Dies, Nickel Plated, 60 dies to a set, complete with case, \$20.00.



The Turner Porcelain Furnace No. 1, complete, \$21.00.



Illustrated Book Describing Systems Sent Free

## THE TURNER BRASS WORKS

MANUFACTURERS

31 North Franklin Street, CHICAGO, ILL.

SUPPLY  
HOUSES  
ACT AS  
AGENTS



AMES'

The fineness of texture resulting makes it the most durable and satisfactory oxyphosphate for fillings. Several years' use of it for all-round purposes has established this fact. It is hydraulic to the proper degree, and its colors blend surprisingly with tooth structure.

**Ames' Special Crown and Bridge Cement, \$1.35**  
Quick, Medium, Slow-Setting.

**Ames' New Process Oxyphosphate of Copper,** - - - - - **1.00—2.00**

Ames' Original Oxyphosphate of Copper,	1.00
--	------

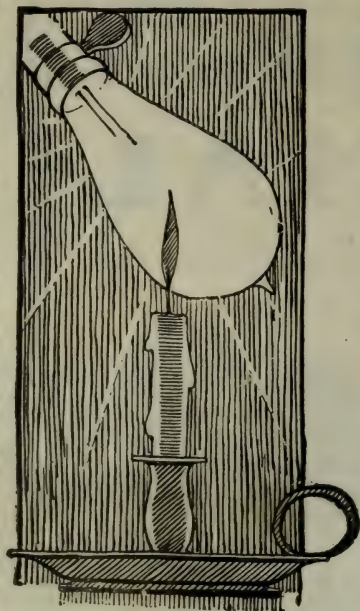
**Ames' Metalloid Cement, in 15 colors, - 1.00—2.00**

As a result of tests, Ames' Metalloid Cement was specified for U. S. Army Dental Service.

### SAMPLES SENT ON APPLICATION

# W. V-B. AMES

36 Washington Street  
C H I C A G O



THE great value of electricity lies not alone in its luminosity, but in a combination of properties which makes it a powerful agent in many directions.

And the great value of

## PHÉNOL SODIQUE

lies not alone in its antiseptic power, but in a combination of properties that makes it useful in more different conditions than any three other antiseptics.

*Write for literature and trial sample.*

**Hance Brothers & White**

ESTABLISHED 1855

Pharmaceutical Chemists

PHILADELPHIA

NEW YORK CHICAGO PITTSBURG LONDON

# SUP=RE=NOL



is not only maintaining its position as the **best local anesthetic** on the market, but is rapidly growing in favor

## EVERYWHERE

and the increasing demand for it is sufficient evidence that it is accepted as the

## STANDARD

for quality and price. It is sold by all dealers everywhere, and guaranteed by us.

### PRICE

1 OZ., 75c.; 5 OZS., \$3.00; 10 OZS., \$5.00

With the **first \$5.00 order** we give the "Ideal" Hypodermic Syringe **free**.

MADE BY

IDEAL CHEMICAL CO., St. Paul, Minn.

SOLD BY

The S. S. White Dental Mfg. Co.

# Favorite Columbia Dental Chairs

Made in two styles.

The No. 1 has a vertical range from 18 inches, lowest position, to 35 inches, highest.

The No. 2 has a vertical range from 17 inches, lowest position, to 37 inches, highest.

This latter chair is the lowest foot-operated chair on the market.

They combine every essential feature requisite in high-class chairs.

They are convenient and exceptionally durable.

They have raising and lowering mechanisms remarkably easy to operate.

They have ample range for either short or tall operators.

They have Sectional Head-rests which meet every conceivable requirement.

In short, they combine all correct ideas, especially avoid freak mechanism, and give to the dentist chairs which, for convenience, strength and comfort to patients, are unexcelled.



## THE RITTER DENTAL MFG. CO.,

ROCHESTER, N. Y., U. S. A.

*Our goods for sale by all  
Dental Dealers.*

Dental Depot,  
10 East 23d Street, New York City.

In writing for catalogue or information, please mention this paper.

## The Griswold Clinics

TYPICAL CASE NO. 1

*No teeth posterior to cuspid  
or bicuspid*

The Griswold attachments will hold an upper denture firm where there are no teeth posterior to cuspids or bicuspids in both upper and lower cases.

This system allows the denture to be readjusted so that its anterior ends will always be supported by the gums, even when absorption has taken place, thus avoiding all strain on the abutments and the loosening of the supporting teeth.

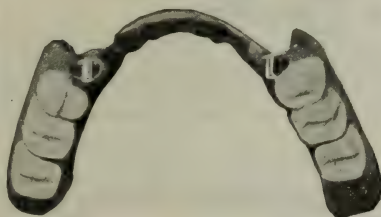
The Griswold attachments allow the plate to be readily removed for cleaning, yet when in place it is perfectly rigid.

The attachments may be reversed, the male member being soldered to the tooth-cap, and the female member to the denture if the case requires.

The new Griswold outfits are furnished by all dental supply houses. Write for booklet or for information on special cases.

**The Griswold  
Dental Bridge Company**

Sole Agents for Kister's Amalgam  
623 St. James Building New York





# DR. VEO'S REMEDY

(NON-SECRET)

FOR  
PYORRHEA

A new scientific treatment which is  
both successful and profitable.



## READ WHAT OTHERS SAY

DR. G. P. WIKSELL, Hotel Pelham, Boston, says:  
"Have used REMEDY three years, at the rate of  
twelve bottles per year; for over one year have  
discarded all other treatments for Pyorrhea."

DR. P. P. NICHOLS, Northampton, Mass., says:  
"Am using about six bottles a year of REMEDY;  
cannot get along without it."

FOR SALE BY  
**S. S. White Dental Mfg. Co.**  
**Price \$2.00**

SEND FOR LITERATURE AND FORMULA

**Wanted.** A good operator with Swiss Federal Dental Diploma can  
hear of an exceptional opening by addressing me.

All around man for Cape Colony, South Africa. Two years' contract;  
second-class passage paid out from New York. State salary expected.

Exceptional opening in South American city for a good porcelain and  
crown- and bridge-worker. Large salary. Two years' contract.

Practices for sale; positions. Send for complete list.

CHARLES R. HAMBLY, D.D.S., Confidential Broker, Bradford, Pa., U. S. A.

**Wanted.** To purchase a partnership or established dental practice in  
London or on the Continent. Address "AMERICAN," care  
DENTAL COSMOS, Box 1615, Philadelphia, Pa.

## Dr. Peeso's Post-Graduate School

3340 Walnut Street, Philadelphia

A permanent school for Post-Graduate work in **removable** and fixed Crown  
and Bridge practice.

A thorough training in the technique of preparation of supports and abutments,  
the most important part of this work, is assured. The practical application of porce-  
lain to Crown- and Bridge-work will also form a prominent feature of the course.

Length of Course, six weeks.

For further information and terms, apply to

ARCH<sup>D</sup> C. EGLIN, D.D.S., *Secretary*,  
235 S. Forty-second Street.

FRED A. PEESO, D.D.S.,  
4251 Regent Square, Philadelphia, Pa.

## UNIVERSITY OF MINNESOTA. College of Dentistry.

A high-class school for high-grade students.

Entrance Qualifications: In addition to credits for two years High-School work, a credit  
in manual training, or evidence of possessing mechanical ability, will be required.

COMMENCING WITH 1903, THE COURSE WILL BE EXTENDED TO FOUR YEARS.

Clinical facilities unsurpassed.

Last day for matriculation, session 1902-1903, September 16.

For further particulars, address,

**W. P. DICKINSON, D.D.S., Dean,**

**Andrus Building,**

**Minneapolis.**

# Indiana Dental College

DEPARTMENT DENTAL SURGERY  
UNIVERSITY OF INDIANAPOLIS

The twenty-fourth annual session is now in progress. The twenty-fifth annual session will open on the first Tuesday in October, 1903.  
For catalogue and all information, address

INDIANA DENTAL COLLEGE

OHIO AND DELAWARE STREETS

INDIANAPOLIS, IND.

## Michigan University Dental College.

ADMISSION EXAMINATIONS are held during the last week of June and September.  
THE ANNUAL TERM begins September 25th and continues for nine months, closing the 20th of June.

THE AVERAGE ANNUAL FEES for tuition and laboratory expenses will be about \$65 for non-residents of Michigan.

THE ANNUAL ANNOUNCEMENT contains particulars and will be sent on request.

J. TAFT, Dean,

Ann Arbor, Mich.

## Why Not Have JUNE Weather

FOR YOUR  
WINTER COURSE IN  
DENTAL COLLEGE?

"For here no Arctic winds explore  
The crannies of each frail abode;  
No fiends are shrieking at the door  
Nor piling drifts along the road."

SEND FOR CATALOGUE OF THE COLLEGE OF DENTISTRY

UNIVERSITY OF SOUTHERN CALIFORNIA.

GARRETT NEWKIRK, *Dean*,

LOS ANGELES, CAL.

203 South Broadway.

## Detroit College of Medicine—Department of Dental Surgery.

DETROIT - - MICHIGAN.

Established 1891.

MEMBER OF NATIONAL ASSOCIATION OF DENTAL FACULTIES, and recognized by the NATIONAL BOARD OF DENTAL EXAMINERS.

The TWELFTH ANNUAL SESSION will begin September 24, 1902, and continue nine months.

FOUR FULL COURSES OF STUDY of nine months each are required for graduation.

FEES—Matriculation, \$5.00; Regular Course, \$60.00; Graduation, \$30.00.

A perpetual ticket (not transferable), good for four or more courses, will be issued for \$200. For full particulars and annual announcement, address

Dr. H. O. WALKER, Secretary, No. 27 Adams Avenue, East,  
or G. S. SHATTUCK, Professor in charge, Detroit College of  
Medicine, Detroit, Michigan.

# Ohio College of Dental Surgery.

DEPARTMENT OF DENTISTRY—UNIVERSITY OF CINCINNATI.

## Session 1902-1903.

### FACULTY.

- J. S. CASSIDY, A.M., M.D., D.D.S., Professor of Chemistry and Materia Medica.  
H. A. SMITH, A.M., D.D.S., DEAN OF THE FACULTY, Professor of Operative Dentistry and Dental Pathology.  
C. M. WRIGHT, A.M., D.D.S., Professor of Physiological and General Pathology.  
WM. KNIGHT, M.D., D.D.S., Professor of Anatomy and Oral Surgery.  
GRANT MOLYNEAUX, D.D.S., Professor of Prosthetic Dentistry and Metallurgy.  
H. T. SMITH, D.D.S., Professor of Clinical Operative Dentistry and Orthodontia.  
T. I. WAY, D.D.S., Professor of Dental Technics.  
C. I. KEELY, D.D.S., Lecturer on Orthodontia.  
L. E. CUSTER, D.D.S., Lecturer on Anesthetics and Dental Electricity.  
O. L. CAMERON, Lecturer on Bacteriology.

### DEMONSTRATORS.

- T. I. WAY, D.D.S., Superintendent of Clinics and Instructor in Dental Technics.  
E. A. MEHAFFEY, D.D.S., Demonstrator of Crown- and Bridge-Work and Operative Dentistry.  
FRANK BURGER, D.D.S., Demonstrator of Orthodontia and Instructor in Extraction of Teeth.  
A. N. KEARBY, D.D.S., Demonstrator of Operative Dentistry.  
J. D. GORDON, D.D.S., Demonstrator of Prosthetic Dentistry and Instructor in Prosthetic Technics.  
H. E. CASWELL, D.D.S., Demonstrator of Prosthetic Dentistry.  
H. C. MATLACK, D.D.S., Consulting Oral Surgeon Cincinnati Hospital, Demonstrator of Anatomy.  
DAVID STERN, B.S., D.D.S., Demonstrator of Analytical Chemistry.  
W. O. HULICK, D.D.S., Demonstrator of Porcelain Dental Art.  
A. G. ROSE, D.D.S., Curator of Museum and Library.

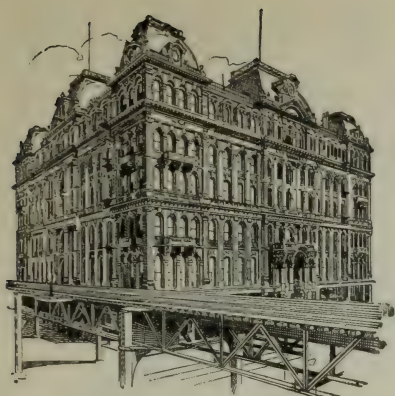
The Fifty seventh Annual Session begins October 7, 1902, and closes May 7, 1903.  
A Spring Course of Clinical Instruction begins May 8, 1903.  
A Fall Course of Clinical Instruction begins September 7, 1903.

For further information and announcement, address

**H. A. SMITH, D.D.S., Dean,**  
**or H. T. SMITH, D.D.S., Secretary,**

116 Garfield Place, CINCINNATI, OHIO.





# REMOVAL NOTICE

OF...

## NORTHWESTERN UNIVERSITY DENTAL SCHOOL

NORTHWESTERN UNIVERSITY DENTAL SCHOOL NOW OCCUPIES

# ITS OWN NEW SCHOOL BUILDING

SOUTHEAST CORNER LAKE AND DEARBORN STREETS.

**IDEAL LOCATION** Situated within the Elevated Railroad Loop, not more than three squares from every line of transportation. Convenient to business center. Accessible to the entire population of two millions of people, insuring an abundance of clinical work of every kind and character.

**BUILDING** Admirably arranged and fitted especially for Dental Education, and furnished with all modern conveniences; elevators, steam heat, electricity and gas.

**CLINICAL OPERATING ROOMS** Located on the top floor, are constructed with arched ceilings, center of which is twenty-eight feet from the floor. They are thoroughly lighted by windows and skylights, insuring perfect ventilation and light for every operating chair. The entire clinic is furnished with one hundred and sixty Columbia Operating Chairs and Clark Fountain Cuspidors.

**LECTURE ROOMS** Perfect in arrangement, ventilation and light.

**ORAL SURGERY** The increased interest and demand for training in this branch of dentistry by the profession and student has been recognized by the University and a magnificent amphitheater with a seating capacity for over two hundred students is provided for this department. In connection with this there are separate waiting and preparation rooms for exclusive use of oral surgery patients, and there are also recovery rooms provided for the subsequent care of patients recovering from anaesthetics or undergoing extensive operations. The whole department is equipped with every modern convenience.

**ADDED LABORATORIES** In order to meet the requirements of advanced dental education, the University has added Freshman Chemical, Physiological and Physical Laboratories to their Laboratory equipment.

The School has been enlarged in all its departments to meet the increasing demands, and no expense has been spared to make it the best in every particular.

### FACULTY:

EDMUND J. JAMES, A.M., Ph.D., LL.D., *President of the University.*  
 GREENE VARDIMAN BLACK, M.D., D.D.S., Sc.D., LL.D., *Dean, Professor of Operative Dentistry, Pathology and Bacteriology.*  
 THOMAS LEWIS GILMER, M.D., D.D.S., *Professor of Oral Surgery.*  
 ELGIN MAWHINNEY, D.D.S., *Professor of Special Pathology, Materia Medica and Therapeutics.*  
 EDMUND NOYES, D.D.S., *Professor of Dental Jurisprudence and Ethics.*  
 WILLIAM EDWARD HARPER, D.D.S., *Professor of Operative Technics, Assistant Professor of Operative Dentistry. Secretary of the Faculty.*  
 JAMES HARRISON PROTHERO, D.D.S., *Professor of Prosthetic Technics, Prosthetic Dentistry and Metallurgy.*  
 FREDERICK BOGUE NOYES, B.A., D.D.S., *Professor of Histology.*  
 TWING BROOKS WIGGIN, M.D., *Professor of Physiology and Pathology.*  
 VERNON JAMES HALL, Ph.D., *Professor of Chemistry.*  
 GEORGE A. DORSEY, Ph.D., *Professor of Comparative Anatomy.*  
 CHARLES LEWIS MIX, A.M., M.D., *Professor of Anatomy.*

FRED WILLIAM GETHRO, D.D.S., *Lecturer on Operative Technics.*  
 EUGENE S. WILLARD, D.D.S., *Lecturer on Bacteriology.*  
 IRA BENSON SELLERY, D.D.S., *Lecturer on Orthodontia.*

In addition to the Faculty, the University provides twenty-five Special Instructors who devote their entire time to the school.

Address all communications to

DR. G. V. BLACK, Dean

DR. WM. E. HARPER, Secretary,  
Southeast Corner Lake and Dearborn Streets.

# New York College of Dentistry

*Incorporated by the Legislature of the State of New York in 1865*

1902=1903

37th COLLEGIATE YEAR

Infirmary Course

May to October 1902 (Optional and free)

Lecture Session

October 1902 to May 1903 (Obligatory)

For admission preliminary educational, curriculum, and other  
requirements write for an announcement, addressing

FANEUIL D. WEISSE, M.D., Dean,  
205-207 East 23d Street, New York, N. Y.

# Removal Announcement

---



We will move into the above building April 1, 1902, and complete the term in the new quarters.

It is a five-story brick, 50 by 90 feet, with unobstructed light on three sides and most admirably adapted for college purposes. It is heated by steam and has every modern convenience. It is one square from the new Union Station, in the center of the downtown populous district of this great manufacturing city.

Write for catalogue to

**PITTSBURG DENTAL COLLEGE,**

DEPT. OF WESTERN UNIVERSITY OF PA.

Address after April 1, 1902,  
1003 PENN AVE.,

PITTSBURG, PA.



# Medico-Chirurgical College of Philadelphia.

## DEPARTMENT OF DENTISTRY.

### FACULTY.

ROBERT H. NONES, D.D.S., Professor of Prosthetic Dentistry, Dental Metallurgy, Crown- and Bridge-Work, and Clinical Dentistry.  
 GEORGE W. CUPIT, D.D.S., Professor of Operative Dentistry.  
 EARLE C. RICE, D.D.S., Professor of Dental Pathology, Therapeutics and Materia Medica.  
 JOHN V. SHOEMAKER, M.D., LL.D., Professor of Anesthesia and Anesthetics.  
 ERNEST LAPLACE, M.D., LL.D., Professor of Oral Surgery.  
 WILLIAM M. RODMAN, A.M., M.D., Professor of Oral Surgery.  
 ISAAC OTT, A.M., M.D., Professor of Physiology.  
 JOSEPH MCFARLAND, M.D., Professor of Pathology and Bacteriology.  
 JOHN C. HEISLER, M.D., Professor of Anatomy.  
 GEORGE H. MEEKER, M.S., Ph.D., Professor of Physics, Chemistry, and Metallurgy.

### AUXILIARY FACULTY.

SENECA EGBERT, A.M., M.D., Professor of Hygiene.  
 ALBERT C. BUCKLEY, M.D., Associate Professor of Histology.  
 MATTHEW BEARDWOOD, JR., A.M., M.D., Adjunct Professor of Clinical Chemistry and Lecturer on Toxicology.

### LECTURERS.

THOMAS J. CLEMENS, M.D., D.D.S., Lecturer on Materia Medica.  
 JOHN R. YORKS, D.D.S., Lecturer on Operative Dentistry.  
 JOHN M. FOGG, D.D.S., Lecturer on Clinical Dentistry.  
 W. STORER HOW, D.D.S., Lecturer on Artificial Crown Mounting.  
 C. F. HORGAN, D.D.S., Lecturer on Oral Hygiene.  
 GEORGE W. PFROMM, M.D., Lecturer on Anesthetics and Anesthesia.  
 W. WAYNE BABCOCK, M.D., Lecturer on Pathology and Bacteriology.  
 JOHN H. EGAN, M.D., Lecturer on Physical Diagnosis and Clinical Instructor in Anesthetics.

### CLINICAL INSTRUCTORS.

S. ELDRED GILBERT, D.D.S.	R. H. JOHN, D.D.S.
S. BLAIR LUCKIE, D.D.S.	J. A. WAAS, D.D.S.
J. D. PETERS, D.D.S.	THOMAS D. SINCLAIR, D.D.S.
HARMAN YERKES, D.D.S.	JOHN M. FOGG, D.D.S.
HAYES A. CLEMENT, D.D.S.	FRANK L. BASSETT, D.D.S.
C. H. S. LITTLETON, D.D.S.	GEORGE F. ROOT, D.D.S.
FRANK D. FOCHT, D.D.S.	LEWIS MARTIN, D.D.S.
HENRY A. ICKES, D.D.S.	A. W. DEANE, D.D.S.

### Chiefs, Demonstrators, Instructors, and Assistant Demonstrators.

ARTHUR R. DRAY, D.D.S., Chief of Clinics.  
 HENRY B. NONES, D.D.S., Chief of Prosthetic Department.  
 G. CLIFTON GUEST, D.D.S., Assistant Demonstrator of Prosthetic Dentistry.  
 THOS. J. BYRNE, D.D.S., Demonstrator of Clinical Prosthetic Dentistry and Orthodontia.  
 JOHN J. STETZER, D.D.S., Assistant Demonstrator of Prosthetic Dentistry.  
 HENRY A. BARY, D.D.S., Assistant Demonstrator of Prosthetic Dentistry.  
 J. B. JONES, D.D.S., Assistant Demonstrator of Prosthetic Dentistry.  
 ALEXANDER H. REYNOLDS, D.D.S., Assistant Demonstrator of Operative Dentistry.  
 R. H. CALELY, D.D.S., Assistant Demonstrator of Operative Dentistry.  
 E. J. HAYS, D.D.S., Assistant Demonstrator of Operative Dentistry.  
 THOMAS J. CLEMENS, M.D., D.D.S., Demonstrator of Oral Surgery.  
 FRANK S. BOWMAN, M.D., Instructor in Oral Surgery.  
 W. HERSEY THOMAS, M.D., Instructor in Oral Surgery.  
 WILLIAM H. GOOD, M.D., Instructor in Physiology.  
 J. T. ROXBY, M.D., Demonstrator of Anatomy.  
 R. D. NEWTON, M.D., Instructor in Anesthesia and Anesthetics.  
 WILLIAM V. LAWS, M. D., Demonstrator of Operative Surgery.

### SESSION.

The fall session will begin September 1, 1902, the regular session October 6, 1902, and continue seven months, examinations and graduation exercises being held concurrently with those of the Medical Department.

The courses will be graded, and a feature of the plan of teaching will be the subdivision of the classes into small sections, each to receive in turn the same instruction. For demonstrations in practical dentistry there will be a special room known as the Professor's Clinic-Room, fitted up with every modern appliance of value to the student. In this room there will be regular demonstrations to small classes, thus insuring the student the best opportunity of gaining a thorough knowledge of general practice.

Crown- and Bridge-Work will be thoroughly demonstrated, also Porcelain Work, in a room specially fitted up for the purpose.

By a rule adopted by the National Association of Dental Faculties, all students are required to enter their names not later than October 16.

### FEES.

Matriculation (paid only once).....	\$5.00
Tickets for each course, including Laboratories.....	100.00
Dissecting fee .....	10.00
Diploma fee .....	25.00

ROBERT H. NONES, D.D.S., Dean  
 of the Department of Dentistry, Medico-Chirurgical College, Cherry St. above 17th St.

# Pennsylvania College of Dental Surgery.

Eleventh Street, below Spruce, corner of Clinton St.

**FORTY-SIXTH ANNUAL SESSION, 1901-1902.**

## FACULTY.

C. N. PEIRCE, D.D.S., Emeritus Professor of Principles and Practice of Operative Dentistry.  
HENRY LEFFMANN, M.D., D.D.S., Emeritus Professor of Chemistry.  
WILBUR F. LITCH, M.D., D.D.S., Professor of Materia Medica, Therapeutics, and Principles of Prosthetic Dentistry.  
ALBERT P. BRUBAKER, M.D., D.D.S., Professor of Physiology, General Pathology, and Bacteriology.  
I. NORMAN BROOMELL, D.D.S., Professor of Dental Anatomy, Dental Histology, and Prosthetic Technics.  
GEORGE W. WARREN, A.M., D.D.S., Professor of Principles and Practice of Operative Dentistry.  
PERCIVAL E. LODER, M.D., D.D.S., Professor of Anatomy.  
W. J. ROE, M.D., D.D.S., Professor of Surgical Pathology and Oral Surgery.  
J. BIRD MOYER, B.S., Ph.D., Professor of Chemistry and Metallurgy.

## AUXILIARY INSTRUCTORS—Instructors in Operative Dentistry.

E. ROLAND HEARN, D.D.S. } Chief Instructors.  
J. CLARENCE SALVAS, D.D.S. }  
LOUIS BRITTON, D.D.S. J. W. ADAMS, D.D.S. W. K. THORPE, D.D.S.

## Instructors in Prosthetic Dentistry.

RUPERT G. BEALE, D.D.S. E. A. KRETCHMAN, D.D.S.  
FREDERICK R. BRUNET, D.D.S. W. T. HERBST, D.D.S.  
FRANK S. HALL, D.D.S. S. ELWIN CONLEY, D.D.S.  
Instructor in Chemistry. A. GRANT LODER, A.M., M.D.  
EDWARD WAYNE, D.D.S. GEORGE VARWIG, D.D.S., Ass't.  
Instructor in Metallurgy. W. J. GRIFFIN, D.D.S., Ass't.  
E. E. HUBER, D.D.S. Instructor in Surgery and Bandaging.  
W. R. ROE, D.D.S.

## Special.

CHARLES S. HEARN, M.D. WILLIAM B. WARREN, D.D.S.,  
Instructor in Histology and Microscopy. Instructor in Crown- and Bridge-work.  
GEO. C. BRYANT, D.D.S., F. P. RUTHERFORD, Ph.G., D.D.S.,  
Instructor in Dental Histology and Instructor in Bacteriology, Pharmacol-  
Ceramics. ogy, etc.

RUPERT G. BEALE, D.D.S.,  
Instructor in Appliances for Cleft-Palate Deformities and Maxillary Fractures.

EBEN M. FLAGG, D.D.S.,  
Instructor in Prosthetic Art and Mechanism.

## Chair of Anatomy.

J. B. ZELLER  
JUSTIN C. NYCE

## Clinical Assistants.

Chair Oral Surgery.  
J. M. DANNEKER, D.D.S.  
FRANK T. GRENNAN, D.D.S.

## Clinical Instructors.

Dr. C. PALMER Dr. R. HOLLENBACK Dr. MARY H. STILWELL  
Dr. CHARLES F. BONSALE Dr. A. B. ABELL Dr. G. L. S. JAMESON  
Dr. W. R. MILLARD Dr. J. HOWARD GASKILL Dr. H. C. REGISTER  
Dr. W. H. TRUEMAN

This College has accepted the requirements of the National Association of Dental Faculties with regard to admission and graduation of students. (See announcement for 1902-1903.)

## Fall Session.

THE FALL COURSE will commence September 9, and continue until the 1st of October, and will be free to those who matriculate for the regular session.

## The Regular Session

Will commence on October 1, 1902, and continue until May 1, 1903.

## Clinical Practice.

Lecture hours excepted, general clinical practice is available for the student continuously through the day. Competent instructors are always present.

## FEES.

Matriculation (paid but once)..... \$5.00  
For each year..... 100.00  
Dissecting Fee ..... 10.00  
Diploma Fee ..... 30.00

Board can be obtained at from \$4.00 to \$6.00 per week.

The instruments and tools required can be procured for from \$35.00 to \$45.00. This sum does not include the price of dental engine.

For further information, address

WILBUR F. LITCH, M.D., D.D.S., Dean, 1507 Walnut St., Philada.  
GEO. W. WARREN, A.M., D.D.S., Secretary, 1338 Walnut St., Philada.

# University of Pennsylvania,

## DEPARTMENT OF DENTISTRY.

### FACULTY.

CHARLES C. HARRISON, LL.D., Provost, and *ex-officio* President.  
EDGAR F. SMITH, Ph.D., Sc.D., Vice-Provost.

EDWIN T. DARBY, M.D., D.D.S., Professor of Operative Dentistry and Dental Histology.

JAMES TRUMAN, D.D.S., Professor of Dental Pathology, Therapeutics, and Materia Medica.

EDWARD C. KIRK, D.D.S., Professor of Clinical Dentistry.

EDWARD T. REICHERT, M.D., Professor of Physiology.

GEORGE A. PIERSOL, M.D., Professor of Anatomy.

JOHN MARSHALL, M.D., Nat. Sc.D., Professor of Chemistry.

MATTHEW H. CRYER, M.D., D.D.S., Professor of Oral Surgery.

ALEXANDER C. ABBOTT, M.D., Professor of Bacteriology.

CHAS. R. TURNER, D.D.S., M.D., Professor of Mechanical Dentistry and Metallurgy.

GEORGE G. MILLIKEN, M.D., D.D.S., Assistant Professor of Operative Technics.

JOHN D. THOMAS, D.D.S., Lecturer on Nitrous Oxid.

MEYER L. RHEIN, M.D., D.D.S., Lecturer on Dental Pathology.

SAFFORD G. PERRY, D.D.S., Lecturer on Operative Dentistry.

FREDERICK A. PEESE, D.D.S., Lecturer on Crown- and Bridge-Work.

JULIO ENDELMAN, D.D.S., Instructor in Materia Medica.

### CLINICAL INSTRUCTORS.

Dr. C. C. BECK,  
Dr. W. R. MILLARD,  
Dr. D. N. McQUILLEN,

Dr. H. C. REGISTER,  
Dr. EDW. I. KEEFFER,

Dr. R. R. UNDERWOOD,  
Dr. I. F. WARDWELL,  
Dr. JOHN R. YORKS.

### DEMONSTRATORS.

#### Operative Dentistry.

WILLIAM DIEHL, D.D.S.  
WILSON ZERFING, D.D.S.  
WM. C. MARSH, D.D.S.  
L. W. DARLINGTON, D.D.S.

JOHN A. MCCLAIN, D.D.S.  
S. MERRILL WEEKS, D.D.S.  
T. VICTOR SMITH, D.D.S.

#### Mechanical Dentistry.

A. DEWITT GRITMAN, D.D.S.  
JAMES G. LANE, D.D.S.  
A. SWANTON BURKE, D.D.S.

JAMES A. DOWDEN, D.D.S.  
MILTON N. KEIM, JR., D.D.S.  
ROBERT J. SEYMOUR, D.D.S.

#### Crown- and Bridge-Work.

J. E. DUNWOODY, D.D.S.  
EUGENE A. LINCOLN, D.D.S.

#### Dental Ceramics.

AMBLER TEES.

#### Dental Metallurgy.

Operative Technics. AUGUSTUS KOENIG, M.D.

FREDERICK W. ALLEN, D.D.S.

GEORGE J. PAYNTER, D.D.S.

#### Prosthetic Technics.

FREDERICK W. AMEND, JR., D.D.S.

#### Anesthesia.

R. HAMILL D. SWING, D.D.S.

#### Histology.

ROBERT FORMAD, M.D.

AUGUSTUS KOENIG, M.D.

GEO. H. CHAMBERS, M.D.

#### Chemistry.

DANIEL W. FETTEROLF, M.D.

#### Anatomy.

ELISHA H. GREGORY, M.D.  
GEO. O. JARVIS, M.D.

#### Osteology.

J. M. SWAN, M.D.

#### Physiology.

EDWARD LODHOLZ, M.D.

J. GARRETT HICKEY, D.D.S.

### CONDITIONS OF ADMISSION.

Candidates for admission are required to present evidence of a preliminary education as follows:

For the session of 1902-03, a diploma of an approved high school having a three years' course or certificate showing three years' attendance at a high school having a four years' course or certificates from other schools showing equivalent education. In lieu of such diploma or certificates, the applicant will be required to pass a matriculate examination which will in each case be the equivalent of that forming the basis of the certificates of required preliminary education.

### FEES.

Matriculation Fee (paid once only)....	\$5.00	Dissecting Fee—First and Second	
Fee for One Course of Lectures.....	100.00	Year, each .....	\$6.00
		Graduation Fee—Third Year.....	30.00

Board can be obtained at from five to eight dollars per week, according to location and accommodations.



# University of Pennsylvania.—Department of Dentistry.

The Dental Department is located in "Dental Hall," the new building especially erected for its use. The facilities thus afforded are, it is believed, unequalled for securing an education complete in all departments of dental science and art. The clinical operating room is 180 by 50 feet, lighted on all sides, and furnished with 100 Wilkerson Chairs of latest pattern, especially constructed for the Department. Each operating chair has a fountain spittoon attached, also especially designed and constructed for this Department. Electrical service is supplied to all the chairs, and is of a character to cover all of the applications of electricity to dentistry. The Prosthetic Department is supplied with laboratory facilities devoted to every branch of the work. Prosthetic technic, in vulcanite and metal work, porcelain work, continuous-gum work, and crown- and bridge-work, is taught by modern methods in separate laboratories especially equipped for the purpose. The laboratories are furnished with power lathes and with compressed-air apparatus for soldering and metallurgical operations.

The clinical patronage of the Department is always in excess of the needs of the students.

Oral surgical clinics, also general surgical clinics, are held twice a week.

Practical instruction in Chemistry, Metallurgy, Histology, Physiology, and Bacteriology is given in appropriately equipped laboratories.

The Dissecting-Room is large, well lighted, thoroughly ventilated, and is furnished with ample material for the successful prosecution of anatomical studies.

The technic or manual training method of imparting instruction is developed in relation to all departments where it has been found applicable.

All of the departments of practical laboratory and clinical instruction are in charge of competent and experienced demonstrators, who are ably assisted in the work of instruction by a full corps of expert assistants.

The Dental Department of the University is an integral part of the University system. Its students at the discretion of the Dean are permitted to take courses of instruction in other departments of the University without additional fees, and are eligible to and participate in all those features of University life common to the whole student body of the institution. These include its athletic features and privileges of the Howard Houston Hall, the club house of an organization governed by the University students and having all of the appointments and desirable features of a strictly first-class club. The dormitories of the University are the best of their kind in this country, and to these the students of dentistry are admitted in common with the students of all the other departments.

---

## The Annual Session.

The session begins the last Friday in September, and ends at Commencement, the third Wednesday in June. (No student admitted to the regular course after October 10th.) The number of lectures per week, with a synopsis of the various branches taught, will be found in the General Catalogue.

For the session of 1902-03, attendance upon three regular courses of lectures will be required before the student can take the final examination for the degree of Doctor of Dental Surgery.

FOR THE SESSION OF 1903-04 THE COURSE OF INSTRUCTION FOR THE ATTAINMENT OF THE DEGREE OF DOCTOR OF DENTAL SURGERY WILL BE INCREASED TO FOUR YEARS.

In order to facilitate work in the practical branches, and to economize the student's time, the regular session is so arranged that students during the first year are required to devote the time equally to DENTAL, HISTOLOGICAL, AND CHEMICAL LABORATORY WORK. During the second and third years the student has practically the entire forenoon of each day for dental work. Thus ample opportunity is afforded for practice in OPERATIVE AND MECHANICAL DENTISTRY. In the latter branches the students of the first year are divided into sections, devoting the time not otherwise engaged to practice in the operating rooms.

## Plan of Examination.

The gradation of the course enables the First-year student to present himself for examination in the following branches: CHEMISTRY, HISTOLOGY, and ANATOMY, including OSTEOLOGY and MYOLOGY. The Second-year student will be examined in MATERIA MEDICA, BACTERIOLOGY, APPLIED ANATOMY, and PHYSIOLOGY, and on the progress in OPERATIVE AND MECHANICAL DENTISTRY. Such an arrangement is economical not only in point of time, but also in facilitating a student's acquirement of knowledge in the remaining branches.

The final examination at the close of the third year is in OPERATIVE DENTISTRY, MECHANICAL DENTISTRY, METALLURGY, CLINICAL DENTISTRY, DENTAL PATHOLOGY AND THERAPEUTICS, AND ORAL SURGERY.

All applicants for advanced standing must pass the required examination of this school, or furnish proof that they have passed EQUIVALENT examinations in some recognized dental or medical school. Graduates of a recognized medical college will be admitted to the second-year class without examination.

For detailed information and announcements, address

**EDWARD C. KIRK, D.D.S.,**

*Dean of the Dental Faculty,*

Dental Hall, Cor. 33d and Locust Sts., Philadelphia, Pa.

# Harvard University, Dental Department.

BOSTON, MASS., 1902-1903.

## FACULTY.

CHARLES W. ELIOT, LL.D., President.  
EUGENE H. SMITH, M.D., Dean and Professor of Mechanical Dentistry and Orthodontia.  
J. COLLINS WARREN, M.D., LL.D., Professor of Surgery.  
HENRY P. BOWDITCH, M.D., LL.D., D.Sc., Professor of Physiology.  
THOMAS DWIGHT, M.D., LL.D., Professor of Anatomy.  
THOMAS FILLEBROWN, M.D., D.M.D., Professor of Operative Dentistry and Oral Surgery.  
WILLIAM B. HILLS, M.D., Associate Professor of Chemistry.  
CHARLES S. MINOT, S.D., LL.D., Professor of Histology.  
HAROLD C. ERNST, M.D., Professor of Bacteriology.  
CHARLES A. BRACKETT, D.M.D., Professor of Dental Pathology.  
EDWARD C. BRIGGS, M.D., D.M.D., Professor of Dental Materia Medica and Therapeutics.  
FRANKLIN DEXTER, M.D., Assistant Professor of Anatomy.

## OPERATIVE DENTISTRY.

WILLIAM H. POTTER, D.M.D., Assistant Professor.

### Lecturers, Instructors, Demonstrators, and Assistants.

EZRA F. TAFT, D.M.D.	EDWIN L. FARRINGTON, D.M.D.
FORREST G. EDDY, D.M.D.	ROBERT J. McMEEKIN, D.M.D.
JULIUS G. W. WERNER, D.M.D.	WILFRED HARLOW STARRATT, D.M.D.
DWIGHT M. CLAPP, D.M.D.	FRANCIS H. HARDING, D.M.D.
EDWIN C. BLAISDELL, D.M.D.	GEORGE L. FORREST, D.M.D.
FREDERICK BRADLEY, D.M.D.	ERNEST J. HART, D.M.D.
HENRY L. UPHAM, D.M.D.	WILLIAM D. SQUAREBRIGGS, D.M.D.
ELLIS PROCTOR HOLMES, D.M.D.	GEORGE C. BALDWIN, D.M.D.
CHARLES E. PERKINS, D.M.D.	EVAN P. WENTWORTH, D.M.D.
JOSEPH T. PAUL, D.M.D.	BURT M. BRISTOL, D.M.D.
GEORGE RUFUS GRAY, D.D.S., D.M.D.	LESLIE H. NAYLOR, D.M.D.
DWIGHT WARD DICKINSON, D.M.D.	

## MECHANICAL DENTISTRY AND ORTHODONTIA.

WILLIAM P. COOKE, D.M.D., Assistant Professor.

### Lecturers, Instructors, Demonstrators, and Assistants.

ARTHUR H. STODDARD, D.M.D.	ARTHUR S. C. CHASE, D.M.D.
ARTHUR W. ELDRED, D.M.D.	ERNEST H. CHUTE, D.M.D.
ALLEN S. BURNHAM, D.M.D.	HAROLD D. W. CROSS, D.M.D.
HARRY L. GRANT, D.M.D.	JOHN D. DICKINSON, D.M.D.
THOMAS B. HAYDEN, D.M.D.	LAWRENCE WILLS BAKER, D.M.D.

GEORGE H. MONKS, M.D., Instructor in Surgical Pathology.  
EDWARD H. TAYLOR, M.D., Instructor in Neurology.  
CHARLES W. RODGERS, D.M.D., Assistant in Dental Materia Medica.  
HENRY C. SMITH, Ph.G., Assistant in Chemistry.  
WALDO E. BOARDMAN, D.M.D., Curator of the Dental Museum and Librarian.

The Thirty-fourth Annual Session of this school begins September 25, 1902, and ends June 25, 1903, with a recess of one week at Christmas, and another in April, making a school-year of nine months of practically continuous work.

General Anatomy, Physiology, General Chemistry, Physiological Chemistry, Hygiene, Histology and Embryology, together with ample dissecting under able demonstrators, are the studies of the first year. The studies for the second year are Operative and Mechanical Dentistry and Orthodontia, Crown- and Bridge-Work and Metallurgy, Materia Medica and Therapeutics, Bacteriology, Dental Pathology and Oral Surgery. Of the third year the studies are Operative and Mechanical Dentistry and Orthodontia, Crown- and Bridge-Work, and Metallurgy, Neurology and Surgical Pathology and Surgery. Attention is called to the fact that TWENTY-SEVEN MONTHS of progressive instruction compose the required three years in the school.

All applicants for advanced standing must pass the examination of the years they desire to omit, or furnish proof that they have passed EQUIVALENT examinations.

The University Degree, D.M.D. (Dentariæ Medicinæ Doctor), is conferred upon all who fulfill the requirements.

Graduates of recognized dental schools will be admitted to the course of Operative and Mechanical Dentistry on payment of \$50 each, or \$100 for both, for the whole or any portion of the academic year.

## FEES.

There are no fees for matriculation, nor for the diploma, nor for the demonstrators. For the first year the student is a member of the school the fee is \$200, payable in two instalments of \$120 and \$80; for the second year, \$150, in two payments of \$100 and \$50; for the third year, \$150, in two payments of \$100 and \$50. For any subsequent year \$50, payable at the beginning of the year. For information and announcement, address

EUGENE H. SMITH, Dean, 283 Dartmouth St., Boston, Mass.

# New York Dental School,

AN INSTITUTION OF THE

University of the State of New York,

216 West Forty-second Street, New York.

## CO-EDUCATIONAL.

MEMBER OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.

The Session of 1902-1903 Begins October 7th.

Last Day of Matriculation, October 17th.

**Practical post-graduate instruction in operative and prosthetic dentistry will be given in the Infirmary throughout the year.**

## FACULTY.

CHARLES MILTON FORD, A.M.,  
M.D., Dean of the Faculty, Professor  
of Anatomy.

WORTHINGTON S. RUSSELL, M.D.,  
Secretary of the Faculty, Professor of  
Materia Medica and Therapeutics, and  
of Pathology.

DELANCEY W. WARD, Ph.D., Pro-  
fessor of Physics, Chemistry, and Met-  
allurgy.

JOHN I. HART, D.D.S., Professor of  
Operative Dentistry and of Dental  
Pathology and Therapeutics.

RODERICK M. SANGER, D.D.S., Pro-  
fessor of Prosthetic Dentistry.

WILLIAM H. HASKIN, M.D., Professor  
of Oral Surgery.

—, Professor of Physiology, Hy-  
giene, and Histology.

## LECTURERS.

FRED WALKER GWYER, M.D.; Frac-  
tures and Dislocations.

ACHILLES E. DAVIS, A.M., M.D.; Dis-  
eases of the Eye and Ear.

HENRY D. HATCH, D.D.S.; Anesthetics.

DR. L. C. TAYLOR; General Dental  
Practice.

CLINTON W. STRANG, D.D.S.; General  
Dental Practice.

GEO. A. MAXFIELD, D.D.S.; General  
Dental Practice.

FLOYD M. CRANDALL, M.D.; Nutri-  
tion and Development of Children.

BENJAMIN C. NASH, D.D.S.; Operative  
Dentistry.

JOSEPH T. BROWN, JR., A.M., LL.B.;  
Dental Jurisprudence.

## INFIRMARY STAFF.

FRED WALKER GWYER, M.D.,  
W. H. HASKINS, M.D., } Surgeons.

EDWARD P. WHITNEY, D.D.S., Super-  
intendent of the Operative Department.

HARRY G. NOLAN, D.D.S., Superin-  
tendent of the Prosthetic Department.

## CLINICAL STAFF.

B. C. NASH, D.D.S.

W. C. DEANE, M.D., D.D.S.

JAMES G. PALMER, D.D.S.

JOSEPH FOURNIER, D.D.S.

FREDERICK BRUECKNER, D.D.S.

F. MILTON SMITH, D.D.S.

ARTHUR L. SWIFT, D.D.S.

SIDNEY S. STOWELL, D.D.S.

PAUL W. HILLER, D.D.S.

H. C. McBRAIR, D.D.S.

L. S. AYRES, D.D.S.

DR. LEVI L. HOWELL.

For catalogue and further information, address

**CHAS. MILTON FORD, M.D., Dean,**

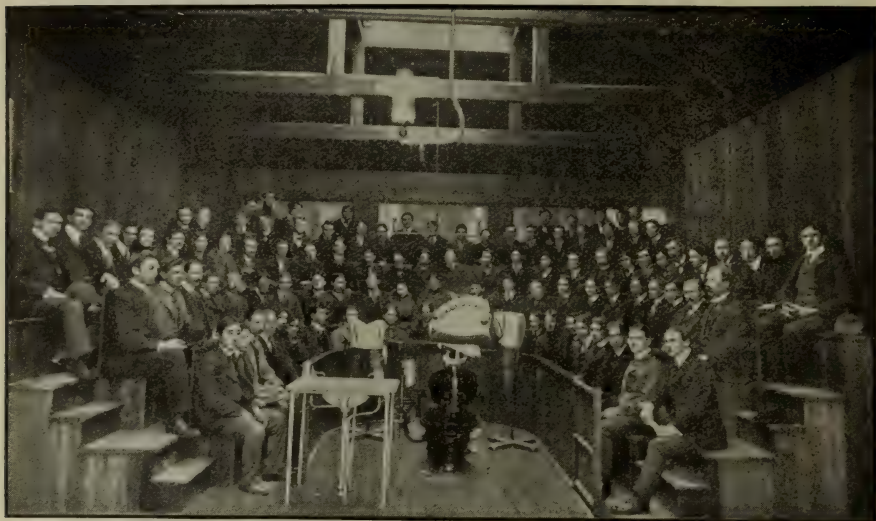
218 West 135th Street, New York City.



# North Pacific Dental College

—PORTLAND, ORE.—

Tenth Annual Session begins October 1, 1902, and continues until May 1, 1903.



CLINICAL DEMONSTRATING ROOM.

**Requirements for Admission.**—Candidates for admission must be of good moral character and must have a good English education.

Students entering for this term can graduate after attending three full Winter Courses of Lectures and passing the required examinations.

STUDENTS WHO ENTER FOR THE TERM OF 1903 AND 1904, AND THEREAFTER, WILL BE REQUIRED TO ATTEND FOUR ANNUAL WINTER COURSES OF SEVEN MONTHS EACH BEFORE GRADUATION.

Students desiring to matriculate should bring and present to the College any diplomas, literary or otherwise, which they have.

**Admission to Advanced Standing.**—Students who present certificates of having taken courses in other recognized schools which cover subjects required in this school will be accredited with such studies if satisfactory to the professors in the respective departments.

Graduates of reputable Medical Colleges will be given one year's credit and be exempt from the study of Anatomy, Physiology, Chemistry, Materia Medica, Therapeutics, and General Histology.

Students will not be given credit for a full course when admitted later than ten days after the opening of the session.

## THE CLINICS OF THIS SCHOOL ARE UNSURPASSED

—the clinical patronage of the infirmary being in excess of the needs of the students.

<b>Tuition.</b> —Matriculation .....	\$5.00
Fees for each year .....	110.00
Graduation .....	20.00

For further information and catalogue, address

**DR. HERBERT C. MILLER, Dean**

609 Oregonian Building

PORTLAND, ORE.

# The Baltimore College of Dental Surgery

Chartered by the Legislature of Maryland in 1839.  
THE OLDEST DENTAL COLLEGE IN THE WORLD.

## FACULTY.

M. WHILLDIN FOSTER, M.D., D.D.S., Professor of Therapeutics and Pathology.  
WM. B. FINNEY, D.D.S., Professor of Dental Mechanism and Metallurgy.  
B. HOLLY SMITH, M.D., D.D.S., Professor of Dental Surgery and Operative Dentistry.  
THOMAS S. LATIMER, M.D., Professor of Physiology and Comparative Anatomy.  
WILLIAM SIMON, Ph.D., M.D., Professor of Chemistry.  
CHARLES F. BEVAN, M.D., Clinical Professor of Oral Surgery.  
J. W. CHAMBERS, M.D., Professor of Anatomy.  
WM. F. LOCKWOOD, M.D., Professor of Materia Medica.

## LECTURERS.

WM. F. SMITH, A.B., M.D., Regional Anatomy.  
R. BAYLY WINDER, Ph.D., D.D.S., Materia Medica.  
EDW. HOFFMEISTER, Ph.D., D.D.S., Materia Medica.  
J. N. FARRAR, M.D., D.D.S., Irregularities.  
Dr. GEORGE EVANS, Crown- and Bridge-Work.  
KASSON C. GIBSON, New York, N. Y., Oral Deformities and Fractured Maxillaries.  
JOHN WALTERHOUSE LORD, A.B., LL.B., Counsel and Lecturer on Dental Jurisprudence.

## CLINICAL INSTRUCTORS.

T. S. WATERS, D.D.S., Chief Clinical Instructor, Resident, Maryland.	R. B. DONALDSON, D.D.S., D. C.
CORYDON PALMER, D.D.S., Ohio	H. A. PARR, D.D.S., N. Y.
E. PARMLY BROWN, D.D.S., N. Y.	J. EMORY SCOTT, D.D.S., Md.
A. L. NORTHROP, D.D.S., N. Y.	C. L. ALEXANDER, D.D.S., N. C.
E. L. HUNTER, D.D.S., N. C.	M. M. MAINE, D.D.S., Conn.
W. W. WALKER, D.D.S., N. Y.	J. W. DAVID, D.D.S., Tex.
OSCAR ADELBURG, D.D.S., N. J.	J. ROACH, D.D.S., Md.
G. MARSHALL SMITH, D.D.S., Md.	A. C. BREWER, D.D.S., Md.
C. M. GINGRICH, D.D.S., Resident, Md.	
J. HALL MOORE, D.D.S., Va.	

## DEMONSTRATORS.

WILLIAM G. FOSTER, D.D.S., Demonstrator of Operative Dentistry.  
GEO. E. HARDY, M.D., D.D.S., Demonstrator of Mechanical Dentistry.  
EDW. HOFFMEISTER, Ph.D., D.D.S., Demonstrator of Chemistry.

## ASSISTANT DEMONSTRATORS.

W. K. DUNBRACCO, D.D.S.	C. H. CARSON, D.D.S.
J. K. BURGESS, D.D.S.	H. M. LEVER, D.D.S.
J. C. SUTHERLAND, D.D.S.	C. S. GORE, D.D.S.
GEO. V. MILHOLLAND, D.D.S.	L. F. PALMER, D.D.S.
L. M. PARSONS, D.D.S.	L. R. PENNINGTON, D.D.S.
C. R. STEWART, D.D.S.	L. D. CORRELL, D.D.S.
HARRY E. KELSEY, D.D.S.	
H. H. HAYDEN, M.D., Demonstrator of Anatomy.	
C. F. BLAKE, M.D., Demonstrator of Anatomy.	
L. F. KORNMAN, M.D., Assistant Demonstrator of Anatomy.	

The Baltimore College of Dental Surgery, the first and for many years the only dental school, offers facilities for the study of dentistry proper, such as age and experience only can give. Its immense museum, complete apparatus, large and well-arranged building, and carefully studied curriculum give to its students great advantages and opportunities, both theoretical and practical, while its age gives its diploma a dignity far outranking all other colleges,—a diploma honorably represented in all civilized countries, and held by the most distinguished members of the dental profession.

The fact that dentistry must be practically taught is fully recognized, the College Infirmary, a most complete, large, and handsome hall, being daily filled with clean and respectable patients, of a class nearly equal to those of the average dentist. The Infirmary is open all the year, students paying an entrance fee, which is deducted from those of the regular succeeding course.

The session begins October 1, closing in April. A large corps of demonstrators, always present, put in actual practice the teachings of all lectures in dentistry,—leaving nothing undemonstrated. All methods are fully taught, all appliances and apparatus used; the making of instruments and the most elaborate gold and continuous-gum work, and all the cases arising in ordinary practice, with many which are rarely seen, carefully demonstrated.

Commencing October 1, 1895, women will be admitted to this College, subject to the same requirements as men.

The College has formed an alliance with the College of Physicians and Surgeons by which its students are privileged to attend all lectures and clinics. The patients of this medical school numbered last year over 40,000.

Graduates of the Baltimore College of Dental Surgery are required to attend but two sessions at the College of Physicians and Surgeons prior to presenting themselves as candidates for the degree of M.D. (See Catalogue.) The qualifications for entering the first year's course are in accordance with the resolutions adopted by the National Association of Dental Faculties.

**TERMS OF GRADUATION.**—Attendance on three winter courses of lectures in this College; as equivalent to one of these we accept one course in any reputable dental college. Graduates in Medicine can enter the Junior Class.

**FEES.**—Matriculation (paid only once), \$5.00. Tuition fee, \$100.00. Diploma fee, \$30.00. Dissecting fee, \$10.00.

Students corresponding with the Dean will please be careful to give full address, and direct their letters to

M. W. FOSTER, M.D., D.D.S., Dean, No. 9 W. Franklin St., Balt., Md.

SCHOOL OF DENTISTRY  
DENTAL DEPARTMENT  
**University of Illinois**  
Cor. Harrison and Honore Sts., Chicago, Ill.



**A**N institution offering excellent clinical advantages and perfectly equipped for the teaching of **Scientific Dentistry** in all its branches. Students entering for this term can graduate after attending three full Winter Courses of lectures and passing the required examinations. Students who enter for the term of 1903 and 1904 and thereafter, will be required to attend four annual Winter Courses before examination for graduation. Annual Course of Instruction will begin October 2, 1902.

*For further information or catalogue, address*

DR. A. H. PECK, Dean, 92 State St., or  
DR. ROBERT P. DONALDSON, Supt.,  
813 W. Harrison St., Chicago, Ill.



# Tufts College Dental School

Formerly BOSTON DENTAL COLLEGE,

For Men and Women.

Boston, Mass.

## FACULTY.

ELMER H. CAPEN, D.D., LL.D., President.

HAROLD WILLIAMS, A.B., M.D.,

*Dean, and Professor of the Principles and Practice of Medicine.*

CHARLES P. THAYER, A.M., M.D.,

*Secretary, and Professor of Anatomy.*

EDWARD W. BRANIGAN, D.D.S.,

*Professor of Clinical Dentistry.*

FRANK G. WHEATLEY, A.M., M.D.,

*Professor of Materia Medica and Therapeutics.*

GEORGE A. BATES, D.D.S.,

*Professor of Dental Histology.*

JOHN C. MUNRO, A.B., M.D.,

*Professor of Surgery.*

CHARLES A. PITKIN, A.M., Ph.D.,

*Professor of Chemistry.*

FREDERICK M. HEMENWAY, D.D.S.,

*Professor of Prosthetic Dentistry.*

TIMOTHY LEARY, M.D.,

*Professor of Pathology and Bacteriology.*

JOSEPH KING KNIGHT, D.D.S.,

*Professor of Prosthodontia.*

GEORGE V. DEARBORN, A.M., M.D., Ph.D.,

*Professor of Physiology.*

HENRY J. BARNES, M.D.,

*Professor of Hygiene.*

## OTHER INSTRUCTORS.

WALTER I. BRIGHAM, D.D.S.,

*Lecturer on Operative Dentistry.*

BYRON H. STROUT, D.D.S.,

*Lecturer on Operative Technics and Instructor in Anesthesia.*

GEORGE C. AINSWORTH, D.D.S.,

*Instructor in Orthodontia.*

WILLIAM P. HOUSTON, D.D.S., HENRY H. PIPER, D.D.S.,

JOHN W. FORBES, D.D.S., WILLIAM RICE, D.D.S.,

EDGAR O. KINSMAN, D.D.S., BURLEIGH C. GILBERT, D.D.S.,

JAMES R. PIPER, D.D.S., ERVIN A. JOHNSON, D.D.S.,

KNUT J. LUTROPP, D.D.S., FREDERICK B. STEVENS, D.D.S.,

*Instructors in Clinical Dentistry.*

FRED. C. MERRILL, D.D.S.,

G. L. MARSHALL, D.D.S.,

*Instructors in Prosthetic Dentistry.*

EUGENE THAYER, M.D.,

WALTER F. WINCHESTER, D.D.S.,

*Demonstrators of Anatomy.*

JOHN I. FRENCH, M.D.,

*Instructor in Materia Medica and Therapeutics.*

Entrance examinations will take place Tuesday, September 30th, at 10 A.M.

Registration of students closes October 13, according to the requirements of the National Association of Dental Faculties, of which this school is a member.

For further information or catalogues address the Secretary,

CHARLES P. THAYER, A.M., M.D.,

416-430 Huntington Ave., Boston, Mass.

# University of Maryland,

## DENTAL DEPARTMENT.

N. E. Corner Lombard and Greene Streets, Baltimore, Md.

---

Hon. BERNARD CARTER, LL.D., Provost.

---

### FACULTY.

**FERDINAND J. S. GORGAS, M.D., D.D.S.,** Professor of Principles of Dental Science, Surgery, and Mechanism.  
**JAMES H. HARRIS, M.D., D.D.S.,** Professor of Operative and Clinical Dentistry.  
**FRANCIS T. MILES, M.D.,** Professor of Physiology.  
**L. McLANE TIFFANY, M.D.,** Clinical Professor of Oral Surgery.  
**RANDOLPH WINSLOW, M.D.,** Professor of Anatomy.  
**R. DORSEY COALE, Ph.D.,** Professor of Chemistry and Metallurgy.  
**I. EDMONDSON ATKINSON, M.D.,** Professor of Materia Medica and Therapeutics.  
**JOHN C. UHLER, M.D., D.D.S.,** Demonstrator of Mechanical Dentistry.  
**ISAAC H. DAVIS, M.D., D.D.S.,** Demonstrator of Operative Dentistry.  
**J. HOLMES SMITH, M.D.,** Demonstrator of Anatomy.  
**CLARENCE J. GRIEVES, D.D.S.,** Lecturer and Demonstrator of Crown- and Bridge-Work.  
**JOHN S. GEISER, D.D.S.,** Demonstrator of Dental Technics.

The Principal Demonstrators are assisted by sixteen Assistant Demonstrators. Special Instructions are given in Continuous-Gum and Bridge- and Crown-Work.

---

Each year since its organization has added to the reputation and prosperity of this University Dental School, until now its graduates, in almost every part of the civilized world, are meeting with the success that ability will ever command. The past session was the most successful one in number of matriculates ever held; and visiting dentists from all parts of this country have expressed themselves as being astonished and gratified at the ability shown by the students when operating upon patients in the infirmary. Forming one of the departments of ONE OF THE OLDEST UNIVERSITIES in this country, its diploma is everywhere recognized and honored.

The instruction in both operative and mechanical dentistry is as thorough as it is possible to make it, and embraces everything pertaining to dental art. The advantages which the general and oral surgical clinics to which the dental students are admitted, as indeed to all the lectures of the University, afford, cannot be overestimated. The many thousands of patients annually treated in the University Hospital, well known to be the largest hospital in Baltimore, afford an abundance of material for dental infirmary and laboratory practice, and the oral surgery clinics.

The Infirmary and Laboratory practice for students is exceptionally large, a fact that adds greatly to the facilities of this Dental School.

The Dental Infirmary and Laboratory Building is one of the largest and most complete structures of the kind in the world. The Infirmary is lighted by forty-seven large windows, and is furnished with the most improved operating chairs. It has again become necessary to enlarge the Dental Building, making an infirmary nearly one hundred feet long, and a Laboratory eighty feet long and forty-three feet wide.

The Dental Infirmary and Laboratory are open daily (except Sunday) during the entire year for the reception of patients; and THE PRACTICE OF DENTAL STUDENTS has increased to such an extent that all the students during the past season have had an abundance of practical work in both operative and prosthetic dentistry. This means for practical instruction has already assumed such large proportions that the supply has been beyond the needs of the large classes in attendance during the past sessions. The exceedingly large number of patients for the extraction of teeth affords ample facilities for practical experience to every student.

In addition to the facilities afforded by this institution for a thorough course of instruction in the theory and practice of dentistry, the clinics in the University Hospital enable the Dental equally with the Medical Students to become familiar with the diseases and operations of Practical Surgery. Excisions of jaw, partial or entire; tumors cancerous or benign, of various parts of the buccal cavity; plastic operations for restoration of cheek, lips, etc., may be mentioned as having been before the class during the year. The induction of anesthesia by means of different agents—ether, chloroform, bromide of ethyl, nitrous oxid gas, all being used in the clinics—cannot fail to be of use to the student of Oral Surgery. Junior as well as Senior students are afforded every opportunity for practical instruction in both operative and mechanical dentistry.

The Lecture Halls in the University Buildings are large and well lighted; and every facility will be afforded for practical and theoretical dental instruction. Demonstrations

in Anatomy, Physiology, and Pathology (for which an abundance of material is furnished free of charge) also form an important part of the regular course. The Dissecting Room is large, well ventilated and lighted, and the Demonstrator of Practical Anatomy passes much of his time assisting the students and directing their labors. Dissecting Material is furnished in abundance, free of charge.

The Qualifications for Admission and Graduation are those adopted by the National Association of Dental Faculties and the State Dental Examining Boards. The Diplomas of this School are recognized by all State Dental Examining Boards.

**Qualifications for Graduation:** The candidate must have attended three full courses of lectures of seven months each in different years at the Regular or Winter Sessions in this institution. As equivalent to one of these, one course in any reputable dental college will be accepted. Graduates of medicine can enter the Junior Class; also those who have attended one full medical course. The matriculant must have a good English education; a diploma from a reputable literary institution, or other evidence of literary qualifications will be received instead of a preliminary examination. All students, both juniors and seniors, have equal advantage in operative and mechanical dentistry in this institution throughout every session.

**Graduation in Medicine:** Graduates of the Dental Department of the University of Maryland are required to meet the requirements as specified in the annual catalogue, prior to presenting themselves as candidates for the degree of "Doctor of Medicine."

The Regular or Winter Session will begin on the 1st day of October, and will terminate in April of each year.

The Summer Session, for practical instruction, will commence in May, and continue until the Regular Session begins. Students in attendance on the Summer Session will have the advantage of all the daily Surgical and Medical Clinics of the University.

The fees for the Regular Session are \$100, Demonstrators' fees included; Matriculation Fee, \$5; Diploma Fee, for candidates for graduation, \$30; Dissecting Tickets, \$10.

For Summer Session, no charge to those who attend the following Winter Session.

Board can be obtained at from \$3.50 to \$5.00 per week, according to quality.

The University Prize and a number of other Prizes will be specified in the annual Catalogue.

Students desiring information and the annual Catalogue will be careful to give full address and direct their letters to

**F. J. S. GORGAS, M.D., D.D.S.,**

*Dean of the Dental Department of the University of Maryland,*

**845 N. Eutaw Street, Baltimore, Md.**

---

# Georgetown University

## School of Medicine.

---

### DENTAL DEPARTMENT.

**Formerly Washington Dental College, Washington, D. C.**

---

Sessions will be held in daytime and begin October 1, 1902.

Commencing with the session of 1903, the course will be extended to Four Years.

---

For terms and further information, apply to

**W. N. COGAN, D.D.S., Dean,**

**"The Sherman," Washington, D. C.**



# BIRMINGHAM

## DENTAL COLLEGE,

BIRMINGHAM, ALA.

Session 1902-1903. The next regular Winter Session will begin October 1, 1902, and continue until May 1, 1903.

ALL THE BRANCHES APPERTAINING TO

## DENTAL SCIENCE AND ART

ARE THOROUGHLY TAUGHT.

THIS COLLEGE IS A MEMBER OF THE NATIONAL ASSOCIATION  
OF DENTAL FACULTIES.

For Catalogue and other information, address

CHAS. A. MERRILL, D.D.S., Dean,

Chalifoux Bldg.

Birmingham, Ala.

---

THE

## Cincinnati College of Dental Surgery and Oral Hospital

DENTAL DEPARTMENT OF OHIO UNIVERSITY

231 and 233 WEST COURT STREET

CINCINNATI, OHIO

The Classes are  
small and  
the Clinics cor-  
respondingly  
large



NE of the many modern and thoroughly  
equipped dental educational institutions  
in America. The annual catalogue con-  
tains full particulars for those contemplating  
the study of dentistry.

FOR CATALOGUE AND OTHER INFORMATION  
ADDRESS

G. S. JUNKERMAN, M.D., D.D.S., Dean

231 WEST COURT ST.

CINCINNATI, OHIO

# Columbian University,

## DENTAL DEPARTMENT.

1325 H Street, Northwest, Washington, D. C.

B. L. WHITMAN, D.D., President of the Columbian University.  
J. HALL LEWIS, D.D.S., Professor of Dental Prosthetics.  
HENRY C. THOMPSON, D.D.S., Professor of Operative Dentistry.  
E. A. DE SCHWEINITZ, Ph.D., Professor of Chemistry.  
WM. P. CARR, M.D., Professor of Physiology.  
STERLING RUFFIN, M.D., Professor of Materia Medica.  
D. K. SHUTE, A.B., M.D., Professor of Anatomy.  
J. R. HAGAN, D.D.S., Professor of Oral Surgery.

The Regular or Winter Session begins about the first of October and ends April 30.  
The Infirmary opens October 1 and closes July 1.

### FEES.

Annual Tuition Fee.....\$100

There are no other Charges or Extras of any kind whatever.

For further information, address

J. HALL LEWIS, D.D.S., Dean,

1023 Vermont Avenue, N. W., Washington, D. C.



## Chicago College of Dental Surgery.

Dental Department of Lake Forest University.

The 21st Annual Course of Instruction will begin about the 1st of October, 1902, ending about May 1, 1903. Students entering for this term can graduate after attending three full Winter Courses of Lectures and passing the required examinations. Students who enter for the term of 1903 and 1904, and thereafter, will be required to attend four Annual Winter Courses of seven months each, before examination for graduation. Instruction is complete in every detail. The Clinical material is abundant. The College Building and its Equipment offer unsurpassed facilities to the Dental Student.

For Announcement and  
Descriptive Booklet  
Address

Dr. TRUMAN W. BROPHY, Dean,  
Wood and Harrison Streets,  
CHICAGO, ILL.

# Philadelphia Dental College

AND

## HOSPITAL OF ORAL SURGERY.

---

### OFFICERS OF THE BOARD OF TRUSTEES.

President, GENERAL JAMES A. BEAVER, LL.D., Ex-Governor of Pennsylvania.

Vice-President, HON. ROBERT E. PATTISON, Ex-Governor of Pennsylvania.

Secretary, CHARLES P. TURNER, M.D.

---

### FACULTY.

S. H. GUILFORD, A.M., D.D.S., Ph.D., *Dean*, Professor of Operative and Prosthetic Dentistry and Orthodontia.

S. B. HOWELL, A.M., M.D., D.D.S., Emeritus Professor of Chemistry, Physics, and Metallurgy.

THOMAS C. STELLWAGEN, M.A., M.D., D.D.S., *Secretary*, Professor of Physiology.

L. GREENBAUM, M.D., D.D.S., Professor of Materia Medica, Anesthesia, and Odontotechnology.

HENRY C. BOENNING, M.D., *Treasurer*, Professor of Anatomy and Surgery, Surgeon of the Oral Clinic.

H. H. BOOM, M.D., Professor of Chemistry, Physics, and Metallurgy.

OTTO E. INGLIS, D.D.S., Special Lecturer on Dental Pathology and Therapeutics.

H. A. BACON, M.D., Ph.G., Lecturer on Histology and Bacteriology.

---

### INSTRUCTORS.

OTTO E. INGLIS, D.D.S., Demonstrator of Operative Dentistry and Dental Therapeutics.

J. W. MOFFITT, D.D.S., Demonstrator of Prosthetic Dentistry, Block and Continuous Gum Work.

W. H. DOLMAN, D.D.S., Demonstrator of Prosthetic Dentistry, Crown- and Bridge-Work.

THOS. J. McLERNON, D.D.S., Demonstrator of Operative Dentistry.

HENRY A. ELTZ, D.D.S., Demonstrator of Operative Dentistry.

WM. KAY, D.D.S., Demonstrator of Operative Dentistry.

H. E. LATHAM, D.D.S., Demonstrator of Porcelain Inlay Work.

W. WALLACE FRITZ, M.D., D.D.S., Demonstrator of Anatomy.

H. AUGUSTUS BACON, M.D., Ph.G., Chief Assistant in Surgical Clinic, Demonstrator of Histology and Bacteriology.

T. C. STELLWAGEN, JR., D.D.S., Assistant in Oral Surgical Clinic.

C. P. FRANKLIN, M.D., Assistant in Oral Surgical Clinic and Chief of Eye Clinic.

CHAS. F. WILBUR, D.D.S., Demonstrator of Dental Technics.

W. I. THOMPSON and W. C. HOUE, Assistant Demonstrators of Dental Technics.

College removed to its large new buildings at Eighteenth and Buttonwood streets. Two hundred feet of northern exposure in Infirmary and Laboratory. Electric current for lighting and motive power. Wilkerson and Columbia operating chairs.

Furnishing and equipment all new and modern.

A thorough didactic and practical course in all that pertains to dentistry.

---

Winter Term begins October 5, and continues for Seven Months.

---

Announcements and full information can be obtained by addressing

S. H. GUILFORD, D.D.S., Dean,  
Eighteenth and Buttonwood Sts., Philadelphia, Pa.



# University of California.

---

## COLLEGE OF DENTISTRY.

---

*Parnassus Avenue, San Francisco.*

---

### FACULTY.

BENJAMIN IDE WHEELER, Ph.D., President of the University, and *ex-officio* President of the Faculty.

•JOSEPH LeCONTE, M.D., LL.D., Honorary Professor of Biology.

L. L. DUNBAR, D.D.S., Emeritus Professor of Operative Dentistry and Dental Histology.

C. L. GODDARD, A.M., D.D.S., Professor of Orthodontia.—Dean.

MAURICE J. SULLIVAN, D.D.S., Professor of Dental Pathology, Therapeutics, and Materia Medica.

WILLIAM B. LEWITT, M.D., Professor of the Principles and Practice of Surgery.

A. A. D'ANCONA, A.B., M.D., Professor of Physiology and Histology.

J. M. WILLIAMSON, M.D., Professor of Anatomy.

W. F. SHARP, D.D.S., D.M.D., Professor of Prosthetic Dentistry.

HARRY P. CARLTON, D.D.S., Professor of Operative Dentistry.—Secretary.

JOSEPH D. HODGEN, D.D.S., Professor of Chemistry and Metallurgy.

---

JOHN SAYRE MARSHALL, M.D., Special Lecturer on Oral Surgery.

---

### LECTURERS, DEMONSTRATORS, AND ASSISTANTS.

JAMES G. SHARP, M.D., D.D.S., Assistant in Oral Surgery.

H. R. WILEY, A.B., LL.B., Lecturer on Dental Jurisprudence.

CHARLES A. LITTON, D.D.S., Superintendent of Infirmary and Assistant in Orthodontia.

M. J. SULLIVAN, D.D.S., Instructor in Clinical Operative Dentistry.

F. W. HARNDEN, D.D.S., Instructor in Operative Technic.

H. D. NOBLE, D.D.S., Instructor in Orthodontia Technic.

P. C. ERHARDT, D.D.S., Demonstrator of Operative Dentistry.

WM. M. HERRINGTON, D.D.S., Demonstrator of Operative Dentistry.

CHAS. P. HAUSELT, D.D.S., Demonstrator of Prosthetic Dentistry.

CHAS. H. BOWMAN, D.D.S., Demonstrator of Prosthetic Dentistry.

STEPHEN CLEARY, M.D., Demonstrator of Anatomy.

CHAS. D. McGETTIGAN, A.B., M.D., Demonstrator of Anatomy.

G. H. CASADAY, D.D.S., Laboratory Assistant in Chemistry and Metallurgy.

A. BAER, B.S., D.D.S., Assistant in Histology.

\*Deceased.

---

The twentieth session will open Monday, September 2, 1901, and close May 31, 1902. No student can be admitted after September 12.

The preliminary examination for admission will be held at the new College Building, Friday and Saturday, August 30 and 31, 1901.

REQUIREMENTS FOR ADMISSION.—Three years of high school work, including one year's study of Latin. High school diplomas or certificates covering this amount of work will be accepted in lieu of an examination.

Lists of studies and blank applications will be furnished on application.

**C. L. GODDARD, Dean.**

All communications should be sent to the Secretary,

**HARRY P. CARLTON, Crocker Building, San Francisco, Cal.**

# Baltimore

---

## Medical College,

---

### Dental Department.

---

(MEMBER OF THE NATIONAL ASSOCIATION OF DENTAL FACULTIES.)

#### FACULTY.

WM. A. MONTELL, D.D.S., *Dean.*

J. W. SMITH, D.D.S.,  
Professor of Dental Prosthesis, Crown- and Bridge-Work.

J. E. ORRISON, D.D.S.,  
Professor of Operative Dentistry, Dental Science, and Dental Technic.

WM. A. MONTELL, D.D.S.,  
Professor of Dental Pathology, Dental Therapeutics and Dental Materia Medica.

A. C. POLE, M.D.,  
Professor of Anatomy.

J. D. BLAKE, M.D.,  
Professor of Operative, Clinical, and Oral Surgery.

SAMUEL T. EARLE, M.D.,  
Professor of Physiology.

J. FRANK CROUCH, M.D.,  
Professor of Materia Medica and Therapeutics.

W. B. D. PENNIMAN, Ph.D., M.D.,  
Professor of Chemistry.

TILGHMAN B. MARDEN, A.B., M.D.,  
Associate Professor of Histology and Biology.

A. LEE BROWN, A.B., M.D.,  
Associate Professor of Chemistry.

J. WILLIAMS LORD, M.D.,  
Associate Professor of Anatomy.

T. R. W. WILSON, M.D.,  
Lecturer on Pathology and Bacteriology.

E. L. WHITNEY, M.D.,  
Associate Professor of Physiological Chemistry.

#### LECTURERS.

E. E. CRUZEN, L.D.S.,  
Dental Ceramics.

WM. A. MILLS, D.D.S.,  
Nitrous Oxid Gas.

#### DEMONSTRATORS.

KENNON W. EGERTON, D.D.S.,  
Demonstrator in Operative Dentistry.

J. H. AMMENHEUSER, D.D.S.

#### TEN ASSISTANT DEMONSTRATORS.

The regular course begins on Tuesday, October 1, 1902, and will continue seven months. New commodious building. New special equipment. Abundant Clinic.

Send for announcement. Address

WM. A. MONTELL, D.D.S., *Dean,*  
833 N. Eutaw Street, Baltimore, Md.

# COLORADO COLLEGE

OF

## DENTAL SURGERY.

UNIVERSITY OF DENVER, DENTAL DEPARTMENT.

Corner 14th and Arapahoe Streets.

---

### SESSION 1902-1903.

---

#### FACULTY.

- W. T. CHAMBERS, D.D.S., Dean and Professor of Operative Dentistry.  
A. L. WHITNEY, D.D.S., Professor of Dental Pathology.  
A. C. WATSON, M.D., Professor of Clinical Dentistry.  
H. A. FYNN, D.D.S., Professor of Regional Anatomy and Dental Histology.  
T. E. CARMODY, D.D.S., D.D.Sc., Professor of Histology and Bacteriology.  
J. S. JACKSON, D.D.S., Professor of Anesthesia and Prosthetic Dentistry.  
A. H. KETCHAM, D.D.S., Professor of Crown- and Bridge-Work.  
M. S. FRASER, D.D.S., Professor of Dental Medicine.  
W. C. BALL, D.D.S., Professor of Pathology and Superintendent of Infirmary.  
W. A. WILCOX, M.D., Professor of Physiology.  
L. B. FREEMAN, M.D., Professor of Principles of Surgery, Oral and Clinical Surgery.  
E. F. DEAN, M.D., Professor of Anatomy.  
E. C. HILL, M.D., Professor of Chemistry and Metallurgy.  
F. L. SMITH, D.D.S., Professor of Orthodontia.  
H. W. McLAUGHLIN, M.D., Professor of Materia Medica and Therapeutics.

---

The Faculty is assisted by an able Board of Special Lecturers and Clinical Instructors.

The College now represents the union of two good schools with the resultant increase in college facilities. The teaching force, equipment and clinic are materially strengthened.

Regular winter course begins October 7th, continuing seven months.

Last day of Matriculation October 17th.

This school is a member of the National Association of Dental Faculties, and the requirements for admission and graduation are those of all recognized schools.

Clinical facilities are ample. For information and announcements address

**A. L. WHITNEY, D.D.S., Secretary,**

**607 McPhee Building, Denver, Colo.**



# NEW ORLEANS COLLEGE of DENTISTRY

COR. CARONDELET AND LAFAYETTE STS.

## OFFICERS OF THE FACULTY.

WM. ERNEST WALKER, D.D.S., M.D., Dean.  
HERMANN B. GESSNER, A.M., M.D., Treasurer.  
C. VICTOR VIGNES, D.D.S., Secretary.

## FACULTY.

JULES J. SARRAZIN, D.D.S., Professor of Dental Anatomy, Operative Technics and Operative Dentistry.  
L. D. ARCHINARD, D.D.S., Professor of Dental Surgery, Oral Pathology and Therapeutics.  
S. R. OLLIPHANT, M.D., Professor of Chemistry, General Materia Medica and Anesthetics.  
HERRMANN B. GESSNER, A.M., M.D., Professor of Anatomy and Surgery, Oral and General.  
CHAS. ECKHARDT, D.D.S., Professor of Dental Materia Medica and Anesthetics.  
OTTO LERCH, A.M., M.D., Ph.D., Professor of Physiology, General Pathology and Hygiene.  
C. VICTOR VIGNES, D.D.S., M.D., Professor of Prosthetic Technics, Prosthetic Dentistry and Metallurgy.  
WM. ERNEST WALKER, D.D.S., M.D., Professor of Orthodontia and Facial Orthopedia, Microscopy, Bacteriology and Clinical Dentistry.

## CLINICAL STAFF.

WM. ERNEST WALKER, D.D.S., M.D., Professor of Clinical Dentistry and Superintendent of the Clinic.  
JULES J. SARRAZIN, D.D.S., Clinician of Operative Dentistry.  
L. D. ARCHINARD, D.D.S., Clinician of Dental Surgery.  
H. B. GESSNER, A.M., M.D., Clinician of Oral Surgery.  
S. R. OLLIPHANT, M.D., Clinician of General Anesthetics.  
CHAS. ECKHARDT, D.D.S., Clinician of Local Anesthetics.  
C. V. VIGNES, D.D.S., Clinician of Prosthetic Dentistry.  
OTTO LERCH, A.M., M.D., Ph.D., Clinical Diagnostician.  
WM. ERNEST WALKER, D.D.S., M.D., Clin. Orthodontia and Facial Orthopedia.  
R. H. WELSH, D.D.S., Assistant Clinician of Orthodontia.  
P. A. MICHEL, D.D.S., Assistant Clinician of Operative Dentistry.  
J. PAUL BAYON, D.D.S., Assistant Clinician of Operative Dentistry.  
J. H. LANDRY, D.D.S., Assistant Clinician of Prosthetic Dentistry.  
EDWARD GAMARD, D.D.S., Assistant Clinician of Prosthetic Dentistry.  
S. S. GROSJEAN, D.D.S., Assistant Clinician of Prosthetic Dentistry.  
(TO BE APPOINTED), Assistant Clinical Diagnostician.  
JULES LAZARD, M.D., Assistant Clinician of Oral Surgery.

## DEMONSTRATORS.

J. H. LANDRY, D.D.S., Demonstrator of Operative Dentistry.  
J. PAUL BAYON, D.D.S., Demonstrator of Operative Dentistry.  
EDWARD GAMARD, D.D.S., Demonstrator of Prosthetic Dentistry.  
R. H. WELSH, D.D.S., Demonstrator of Orthodontic Technics.  
P. A. MICHEL, D.D.S., Demonstrator of Operative Technics.  
H. P. MAGRUDER, D.D.S., Demonstrator of Prosthetic Technics and Metallurgy.  
P. L. CUSACHS, A.B., M.D., M.Ph., Demonstrator of Chemistry.  
JULES LAZARD, M.D., Demonstrator of Anatomy.  
O. L. POTHIER, M.D., Demonstrator of Microscopy and Bacteriology.

## Also Seven Assistant Demonstrators and Fourteen Special Lecturers.

NEW ORLEANS, the metropolis of the South, offers unlimited clinical material, complete educational facilities, a delightful winter climate, convenient bicycle routes, inexpensive recreations, its world-famous Mardi Gras celebrations, and board as low as \$3.00 per week. Dentistry is taught practically and didactically. Collateral medical branches are fully illustrated in clinics and laboratories.

## CALENDAR.

Entrance examinations conducted by the office of the Superintendent of Public Instruction, for students arriving without the required preliminary education certificate, begin.....	SEPTEMBER 16.
Close .....	OCTOBER 10.
Examinations for advancement begin.....	SEPTEMBER 16.
Opening of regular session, 8.30 A.M. ....	OCTOBER 1.
Matriculation for full regular session closes.....	OCTOBER 10.
Practitioners' Course begins.....	FEBRUARY 15.
Practitioners' Course ends.....	MARCH 31.
Final Examinations begin:	
Senior Class.....	APRIL 14.
Junior and Freshman Classes.....	APRIL 28.
Contests for graduation medals in Operative and Prosthetic Dentistry begin .....	APRIL 28.
End .....	MAY 2.
Commencement Exercises .....	MAY 5.
Practical Clinical Dentistry Course begins.....	JUNE 9.
Ends .....	SEPTEMBER 30.

The College holds membership in the National Association of Dental Faculties, and its diploma is recognized by the National Association of Dental Examiners.

For further information and Announcement, address

C. V. VIGNES, D.D.S., Sec'y, 637 Canal St., New Orleans, La.

